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Development of Manual Training in the United States

BY
H. ROSS SMITH

A Thesis Submitted to the Faculty of the Graduate School of the University of Pennsylvania in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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PREFACE

It is the purpose of this thesis to trace out the development of Manual Training in the United States; to state the causes which were responsible for its introduction; to suggest the benefits derived; and to give some idea of the present trend of educational thought in regard to the subject. Much has been written in recent years about Vocational Education, Industrial Training, Technical Training, Mechanic Arts, and Trade Schools. Discussion of these forms of training does not lie within the scope of this paper, except when they are so interrelated with Manual Training that it is practically impossible to divorce them.

Domestic Science is not treated under a separate heading, but is discussed in its relation to Manual Training. Much that is said concerning Manual Training is true, also, of Domestic Science. What Manual Training is to the boys, Domestic Science is to the girls.

Much confusion has arisen among the uninitiated because of the different terms used, hence, it is of prime importance that the distinction between Manual Training and the other forms of training be made perfectly clear.

A Manual Training course, as outlined at the present time, consists of a graded course in wood, iron, and machinists' work; systematic and continued instruction in free-hand and mechanical drawing, combined with academic studies as co-ordinated departments. It is not the purpose of Manual Training to teach trades, but rather to make the boy familiar with the use of tools. It is disciplinary in that it endeavors to train the hand for the purpose of securing at the same time the training of the mind, through the senses of touch and perception. At the same time the eye is being trained to accurate observation. This training first found a place in the curriculum of the high

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schools, but soon began to push its way down into the elementary grades. It is with these phases of our educational work that this investigation has to deal.

In the definition of the other terms, I conform largely to the definitions suggested by Dr. David Snedden, Commissioner of Education for Massachusetts, given in detail in Bulletin No. 12 of the National Society for the Promotion of Industrial Education.

Vocational Education is the most comprehensive term in use at the present time. It is defined as that phase of education whose controlling purpose is to fit for a calling or vocation. In its completeness it always involves at least two large distinguishable aspects—practice in the productive work of the calling itself and study of or about the sciences, art, mathematics, economy, history, or technique which enter into or relate to it. The first may be called the concrete or practical part of Vocational Training, the second, the technical or theoretical part.

Industrial Education may be considered as that phase of education whose controlling purpose is to fit for a trade, craft, or special division of manufacturing work. When defined in this way, it becomes but one form of Vocational Education.

Technical education is designed to be part of vocational education. Each vocation or group of related vocations may have its own body of technical studies or technical studies common to other vocations. Technical training may be considered, then, as that training which is derived from those studies which pertain to some particular art, science, trade, or the like.

Mechanic Arts education is a vague phrase describing activities carrying from Manual Training procedures through technical studies to fully developed trade education.

A Trade School is an industrial school in which practical work, at least as exercises, if not productive, is a prominent feature. Such a school is usually designed (except in the case of girls) for youths of sixteen or more years, corresponding to the customary age of admission to apprenticeship.

CHAPTER I

Historical Sketch

Certain of the principles underlying manual training, depending largely upon native instincts and ability, have always been practiced by man in his various activities. Under primitive conditions, children learned to perform their duties through imitation and by the aid of whatever assistance the parents might see fit to give. These duties required manual effort, without the aid of intellectual studies. As exchange markets came into existence, the divisions of labor became more and more definitely defined. As the divisions of labor multiplied, the Guild and apprenticeship systems were developed to train the beginners. These systems, however, have gradually died out, and, in their places, modern thought has demanded that the State should hold itself responsible for the instruction of the youth, no matter what pursuit in life he may elect. It is not my intent to trace this modern thought in detail, with the exception of the development of the movement in its relation to the public school system of this country.

It will be sufficient if mention is made of but a few of those who first advocated the introduction of manual work in the school room. As early as the beginning of the sixteenth century, Martin Luther emphasized the moral advantages to be derived, if manual work were required in addition to the regular academic studies. Commenius, 1592–1671, in "The Great Didactic," suggests that boys would better find out their special aptitudes if they were given a general knowledge of the mechanic arts.

The Catholic missionaries were emphasizing the manual aspect of education in America as early as 1629. The earliest schools within the present limits of the United States were established by the Franciscans in Florida and New Mexico.

The instruction given in the schools in New Mexico was of a two-fold character: "Up to nine years of age, the children were taught reading, writing, catechism, singing, and playing on musical instruments. Spanish was also taught. A striking feature of this system of education was its practical character. From nine years of age on, the work of the pupil in school was almost wholly industrial. The common arts and trades of the civilized world formed the curriculum—tailoring, shoemaking, carpentering, carving, blacksmithing, bricklaying, stonecutting. The girls were taught to sew and to spin."[1]

In 1647 Sir Wm. Pelty suggested a plan for an Industrial School. He states: "Let in no case the art of drawing and designing be omitted, to what course of life soever those children are to be applied; since the use thereof for expressing the conceptions of the mind seems, at least to us, to be little inferior to that of writing, and in many cases performeth what by words is impossible."[2] The recommendations of Rousseau, 1712–1778, in his Emile are so well known that it is not necessary to repeat them here. Kinderman, 1740–1801, was one of the first to put manual work into actual operation in the school. In 1771 he introduced, among the boys and girls in his Bohemian parish, practical instruction, which dealt particularly with their local occupations. During the latter part of the eighteenth century and the beginning of the nineteenth, Arnold Wageman, Dr. I. G. Krunitz, Fichte, and others made important contributions toward the development of the sentiment that boys and girls would be greatly benefited by receiving instruction in practical subjects.

Special mention should, no doubt, be made of Peletier, Froebel, Pestalozzi, and Cygnaeus. "In 1793, Robespierre proposed to the National Assembly of France a bill for a new educational scheme, prepared by Michael de Peletier. The plan aimed to instill the duty of the habit of work, not as thorough knowledge of any special trade, but as the development of that

[1] J. A. Burns, "The Catholic School System in the United States," pp. 41 and 42.

[2] Barnard's "American Journal of Education," Vol. XI, p. 202.

energy and industrious activity which characterizes earnest, diligent persons. Peletier says: 'I consider this part of education the most important, and, therefore, my plan of general instruction contains manual labor as its vital feature. Of all the means likely to stimulate the average child, none will produce a greater desire for activity than physical work. I would desire that various kinds of handicraft work might be introduced.'"[3]

The story of Pestalozzi's life is a life of unceasing devotion and self-sacrifice to a cause to which he consecrated himself. It was his aim to help the poverty-stricken children particularly, and by the aid of his educational scheme, to aid and uplift them and prepare them for their proper places in society. His first attempt was at Neuhof, where, during the first year, the children "made considerable progress with their manual work, as well as with the lessons that were joined with it, taking great pleasure in both. All they did and said, moreover, seemed to express their appreciation of their benefactor's kind care of them."[4]

In the course of an appeal he made in 1776, Pestalozzi states: "I promise to teach them all to read, write, and cipher; I promise to give all the boys, so far as my position and knowledge will allow me, practical instruction in the most profitable methods of cultivating small plots of land, to teach them to lay down pasture land, to understand the use and value of manures, to know the different sorts of grasses and the importance of mixing them;—it will be the household needs, too, that will give the girls an opportunity of learning gardening, domestic duties, and needlework."[5]

When Pestalozzi was given charge of the poor house at Stanz, his plan was warmly recommended by the members of the Directory, which issued a decree which provided among other things that "the time of the pupils will be divided between field work, house work, and study. An attempt will be made to develop in the pupils as much skill, and as many useful powers as the funds of the establishment will allow."[6]

[3] Row, "The Educational Meaning of Manual Arts and Industries," p. 29.
[4] De Guimps, "Pestalozzi—His Life and Works," p. 55.
[5] *Ibid.*, p. 57.
[6] *Ibid.*, p. 133.

Pestalozzi's conception that manual and mental effort be combined was not an entirely new idea, but he gave it a more thorough trying out than had ever been attempted before. His experiments all ended in failure eventually, but his principles have been followed ever since in modified form. Had he been a better executive, his plans and ideas might not have miscarried so miserably.

Whatever of importance and value has come down to us from Pestalozzi, we owe more to his intense enthusiasm and untiring zeal, which made him persevere against all odds, rather than to any actual benefits derived from his teachings. Yet he pointed out that his ideas were practical under capable management.

At the present time we probably associate Froebel's name more closely with the introduction of the kindergarten than with any other single pedagogical principle. Yet many of his ideas apply equally well to boys and girls who are above the kindergarten grade. There is no doubt that the exploitation of his principles had much to do with crystallizing the manual training movement. Froebel was probably greatly aided by his association with Pestalozzi at Yverdum, in working out his educational scheme.

Froebel believed that "every child, boy, and youth, whatever his condition or position in life, should devote daily at least one or two hours to some serious activity in the production of some definite external piece of work. Lessons through and by work, through and from life, are by far the most impressive and intelligible, and most continuously and intensively progressive both in themselves and in their effect on the learner."[7] He goes on to say that "The domestic and scholastic education of our time leads children to indolence and laziness; a vast amount of human power thereby remains undeveloped and is lost. It would be a most wholesome arrangement in schools to establish actual working hours similar to the existing study hours; and it will surely come to this.[8]

[7] Froebel, "The Education of Man." Tr. by W. N. Hailman, p. 34.
[8] *Ibid.*, p. 35.

"Froebel proposed to devote the forenoon to the instruction in the current subjects of school study, and the afternoon to work in the field, garden, the forest, and in and around the house."[9] His occupations comprised many of those now carried on in the manual training room and in the kindergarten.

Finland secured a prominent place in the manual training movement when, in 1866, she required that a simple course in manual training be made a part of the curricula of all the elementary schools. The course was outlined by Cygnaeus eight years before its final adoption. Following closely upon the action of Finland, Victor Della-Vos, Director of the Imperial Technical School of Moscow, introduced a method of tool-instruction, the exposition of which, by President J. D. Runkle, of the Mass. Institute of Technology, was largely responsible for the interest manifested by many of our own educators in the movement.

Such, in brief, is an outline of the development of the feeling which was aroused among educators in many countries, that the senses, the mind, and the hand should be trained simultaneously. Only those educational thinkers have been mentioned who were the most prominent advocates of the new scheme of education up to the time when our own country began to take an active interest in the movement.

In the mean time, the same question was being agitated in the United States, but not as extensively as in some of the foreign countries. One of the first, and perhaps the first, of our countrymen to give his views on this phase of education, was Benjamin Rush. In a letter to George Clymer, Esq., under the date August 20th, 1790, he expressed his thoughts upon the amusements and punishments which are proper for schools. In the course of the letter he writes as follows: "I would propose that the amusements of our youth, at school, should consist of such exercises as will be most subservient to their future employments in life. These are: (1) agriculture; (2) mechanical occupations; and (3) the business of the learned professions."[10]

[9] Froebel, "The Education of Man," Tr. by W. N. Hailman, p. 38.

[10] "Essays by Benjamin Rush, M. D.," published by Thomas and Samuel E. Bradford, Phila., 1798, p. 58.

Here we have expressed the demand for vocational education which has become so prevalent in recent years. Dr. David Snedden has recently stated that "the education whose controlling motive in the choice of means and methods is to prepare for productive efficiency is vocational" . . . "and from the standpoint of social necessity, vocational education given by some agency is indispensable."[11] He goes on to show that this agency should be the school. The wording of the two statements, separated by more than a hundred years, is different, but the meaning is the same; the school should furnish such instruction as will best prepare the youth for his future occupation. Under types of vocational education Dr. Snedden suggests: (a) The professional; (b) the commercial; (c) the agricultural; (d) the industrial, or those connected with manufacturing and the mechanic arts; (e) the household.[12] Here again, it is seen that the divisions of vocational education, as suggested by the two men, are practically the same. In the time of Benjamin Rush, the commercial pursuits had not attained sufficient importance to warrant a separate heading and the household arts were still taken care of by the home.

In his admirable letter Dr. Rush continues: "There is a variety in the employments of agriculture which may readily be suited to the genius, taste, and strength of young people. An experiment has been made of the efficiency of these employments, as amusements, in the Methodist College at Abington, in Maryland, and, I have been informed, with the happiest effects. A large lot is divided between the scholars, and premiums are adjudged to those of them who produce the most vegetables from their grounds, or who keep them in the best order.

"As the employments of agriculture cannot afford amusement at all seasons of the year, or in cities, I would propose that children should be allured to seek amusements in such of the mechanical arts as are suited to their strength and capac-

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[11] David Snedden, "The Problem of Vocational Education," Houghton, Mifflin Co., p. 13.

[12] *Ibid.*, p. 23.

ities. Where is the boy who does not delight in the use of a hammer—a chisel—or a saw? And who has not enjoyed a high degree of pleasure in his youth, in constructing a miniature house? How amusing are the machines which are employed in the manufacturing of clothing of all kinds! And how full of various entertainment are the mixtures which take place in the chemical arts! Each of these might be contrived upon such a scale, as not only to amuse young people, but to afford a profit to their parents or masters. The Moravians, at Bethlehem in our state (Pennsylvania), have proved that this proposition is not a chimerical one. All the amusements of their children are derived from their performing the subordinate parts of several of the mechanical arts.

"To train the youth who are intended for the learned professions or for merchandise, to the duties of their future employment, by means of useful amusements, which are related to those employments, will be impracticable; but their amusements may be derived from cultivating a spot of ground; for where is the lawyer, the physician, the divine, or the merchant, who has not indulged or felt a passion, in some part of his life, for rural improvements? Indeed I conceive the seeds of knowledge in agriculture will be most productive when they are planted in the minds of this class of scholars."[13]

Further on he states: "To obviate these evils (obliging children to sit too long in one place, or crowding too many of them together in one room), children should be permitted, after they have said their lessons, to amuse themselves in the open air, in some of the useful and agreeable exercises which have been mentioned. Their minds will be strengthened, as well as their bodies relieved by them. To oblige a sprightly boy to sit seven hours in a day, with his little arms pinioned to his sides, and his neck unnaturally bent towards his book; and for no crime! What cruelty and folly are manifested by such an absurd mode of instructing or governing young people."[14]

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[13] "Essays by Benjamin Rush, M. D.," published by Thomas and Samuel E. Bradford, Phila., 1798, pp. 58, 59, 60.

[14] *Ibid.*, p. 63.

It is to be observed that this letter was written before Robespierre presented his bill to the National Assembly of France, before Pestalozzi started his school at Stanz, and when Froebel was but eight years old. It is to be further observed that two institutions in this country are mentioned as having already introduced some of the principles suggested, and it is fair to assume that there were others in existence. As has been pointed out, vocational training was suggested by Rush. He also recommended some of the principles that have recently been taken up and exploited by the advocates of manual training. He suggests that those who intend to enter the learned professions would derive much benefit from practicing agriculture, and that, by taking part in cultivating a piece of ground and in mechanical work, after their lessons have been recited, the children would both strengthen their minds and relieve their bodies. Quite recently I asked a teacher of manual training what, in his opinion, was the greatest benefit derived from a manual training course. His reply was almost identical with the statement above.

During the early part of the nineteenth century, manual labor academies were organized in various parts of the United States. One illustration will be sufficient to give an idea of the method of procedure. The Oneida Institute, N. Y., was established in 1827. Business men of the town gave employment to students and paid the institution for their services. The students made joiner's tools, some beating out mouths, others making handles, and others finishing tools. Others were employed in the wagon and sleigh shop, blacksmith shop, cabinet shop, in the making of bedstead material, in the making of brooms, etc. In 1833, the trustees had measures in progress to furnish a thorough and full course of classical instruction.

After the institute had been in operation for six years, the conclusions of the superintendent were: that young men are willing to labor; that both mind and body are benefited; progress in study is not retarded in general, and in many cases accelerated, while the expenses of an education are diminished very considerably.

Such a program of work and study conforms more closely to the Industrial and half-time schools of the present day than

to the Manual Training school. It is important that this type of school be noted, however, in order that a proper perspective be obtained of the progress of the manual training movement in this country.

In 1832, the Committee on Education of the House of Representatives of Pennsylvania was directed to prepare a report on Manual Labor Academies. In the course of its report, the committee stated that "From a careful examination of the nature of these institutions (Manual Labor Academies), and the principles upon which they are based, and from information derived from gentlemen well versed in education, as well as from personal observation, the committee is fully convinced that whatever prejudices may heretofore have existed against the manual labor system of instruction, it is one peculiarly adapted to supply, in an economical and efficient manner, our present wants. It comprises manual with intellectual labor and recognizes as well, the development of the powers of the body, as increasing the strength and cultivating the various faculties of the mind."[15]

The following propositions were submitted by the committee:

First.—"That the expense of education, when connected with manual labor, judiciously directed, may be reduced one-half."

Second.—"That the exercise of about three hours manual labor, daily, contributes to the health and cheerfulness of the pupil, by strengthening and improving his physical powers, and by engaging his mind in useful pursuits."

Third.—"That so far from manual labor being an impediment in the progress of the pupil in intellectual studies, it has been found that in proportion as one pupil has excelled another in the amount of labor performed, the same pupil has excelled the other, in equal ratio, in his intellectual studies."

Fourth.—"That manual labor institutions tend to break down the distinctions between rich and poor which exist in society, inasmuch as they give an almost equal opportunity of educa-

[15] Mr. Matthias, "Pamphlets on Education" in Report of the Committee on Manual Labor Academies, Feb. 21, 1833, Vol. 2, p. 4.

tion to the poor by labor, as is afforded to the rich by the possession of wealth"; and

Fifth.—"That pupils trained in this way are much better fitted for active life, and better qualified to act as useful citizens, than when educated in any other mode—that they are better as regards physical energy, and better intellectually and morally."[16]

When Illinois College was being established in 1832, the trustees, impelled by public opinion, introduced "a system of manual labor, as conducive to the health and economy of the students." The president of the college attested to this enterprise as follows: "The scheme of manual labor schools was one of the then new-born favorites of the more ardent class of progressives, but had been very generally received by the public and must needs be subjected to the test of experience. This college came into being, just at the unlucky moment when it must needs bear a part in the experiment." "The scheme, however, after considerable pecuniary loss, was abandoned, as fallacious and impracticable."[17]

In 1834, the Industrial Schools of the American Female Guardian Society were started in New York City and, in 1850, the Five Points House of Industry was organized. Following this date, industrial schools began to increase in number much more rapidly. It is to be noted, however, that these early industrial schools were maintained by voluntary contributions, bequests, and tuitions. More recently some of them have received assistance from the city, state, or national government.

A number of the higher institutions of learning in the United States introduced courses in agriculture and engineering about the middle of the nineteenth century. Other colleges and universities were enabled to add these courses, and the work of the institutions already possessing them was greatly augmented by the act of Congress of July 2, 1862, by which the grant of

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[16] Mr. Matthias, "Pamphlets on Education" in Report of the Committee on Manual Labor Academies, Feb. 21, 1833, Vol. 2, p. 5.

[17] Barnard's American Journal of Education, 1856, Vol. 1, p. 228.

land for the endowment of these institutions was made.[18] This act says:

"The leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

Massachusetts led the way in endeavoring to incorporate industrial training in the public school system when she passed a statute in 1872, authorizing the establishment and maintenance by any town and city of any sort of an industrial school as a part of its public school system.[19]

That this law was in advance of public sentiment is clearly shown by the fact that no town or city availed itself of its opportunity until Springfield, in 1898, opened its evening trade school.

Tool-instruction was introduced in Washington University, St. Louis, in 1875, but systematic mechanical work had already been in operation there for a few years. This, then, might be considered as the beginning of the manual training in this country, for it subsequently led up to the establishment of the St. Louis Manual Training School. In 1876, at the Centennial Exposition in Philadelphia, Victor Della-Vos had an exhibit of the results of his instruction from his school in Moscow. This display aroused a great interest and caused considerable comment among the educators of this country. Previous to this time, however, President Runkle, of the Massachusetts Institute of Technology, had become familiar with the system of Della-Vos, and in his report of 1876 gave a clear explanation of the methods pursued. Furthermore, he recommended that instruction shops be introduced in the Institute of Technology.

[18] A description of the work done by these institutions can be found in Industrial Education in the United States, a special Report prepared by the United States Bureau of Education in 1883.

[19] This statute was approved March 9, 1872, and is given in the Report of the Mass. Commission on Industrial and Technical Education, 1906, p. 12.

His suggestion was agreed to, and, in 1877, the shops were practically completed. President Runkle deserves special mention because of the fact that he pointed out definitely that tool-instruction could be made of great value in any scheme of general education.

Following closely upon the action of the Massachusetts Institute of Technology, the St. Louis Manual Training School was established June 6, 1879. This school was made possible through the generosity of several gentlemen in St. Louis. Dr. C. M. Woodward, who was Dean of the Polytechnic School of Washington University, was made Director of the Manual Training School. He had been a strong advocate of manual education, and in an address before the St. Louis Social Science Association in 1878 said: "The manual education which begins in the kindergarten should never cease. Just how we shall supply the missing links in the chain which joins the kindergarten with the fully equipped shops of the polytechnic school, we cannot with certainty suggest." To Dr. Woodward, credit is given for coining the name "Manual Training School."

At the St. Louis Manual Training School for the first time in America the age of admission to school-shops was reduced to fourteen years as a minimum, and a very general three-years' course of study was organized. The ordinance by which the school was established specified its objects in very general terms:

"Its objects shall be instruction in mathematics, drawing, and the English branches of a high-school course, and instruction and practice in the use of tools. The tool-instruction, as at present contemplated, shall include carpentry, wood-turning, pattern-making, iron chipping and filing, forge-work, brazing and soldering, the use of machine-shop tools, and such other instruction of a similar character as it may be deemed advisable to add to the foregoing from time to time."

"The students will divide their working hours, as nearly as possible, equally between mental and manual exercises."

"They shall be admitted, on examination, at not less than fourteen years of age, and the course shall continue three years."[20]

[20] C. M. Woodward, "The Manual Training School," Heath, 1887, p. 5.

The first manual training school to be established as a part of a city school system was the Baltimore Manual Training School. "On the 24th of April, 1883, in response to a motion, a committee was appointed by the school commissioners to report upon the best means of fitting boys and girls 'as quickly as possible for self-support.' On June 19, 1883, the committee reported that it would be expedient to establish a high school for manual education under the supervision of the board, since 'a knowledge of some form of industrial labor is as necessary as a knowledge of books; and as the state and city acknowledge their obligation to teach children to read and write, they can not deny their obligation to teach them to work, as the latter is as essential for the public welfare as the former. Only a small portion of those who receive their education in the public schools ever enter the professions, but the large number become artisans and adopt mechanical occupations for their future support.' On petition, the city council empowered the school commissioners to establish the school, and legislative action was taken in January, 1884. In March of the same year the school was opened with 60 students."[21]

The Chicago Manual Training School, established in 1883 as an incorporated school by the Commercial Club of that city, was opened in January, 1884. In 1885, manual training schools were established in Philadelphia, Boston, and Toledo. Following this date similar schools were organized in various parts of the country, until, in 1890, the United States Commissioner reported 37 public schools offering manual training courses.

"The oldest society for the promotion of Manual Training in this country is the Industrial Education Association of New York, a reorganization of the Kitchen Garden Association of the same city. The new objects of the association since its reorganization in 1884, are: (1) To secure the introduction of manual training as an important factor in general education and to promote the training of both sexes in such industries as shall enable those trained to become self-supporting; (2) to devise methods and systems of industrial training, and to put

[21] United States Commissioner's Report, 1886-87, p. 792.

them into operation in schools and institutions of all grades; (3) to provide and train teachers for this work."[22] This association was, in the main, responsible for the establishment of an industrial normal school or college for the training of teachers, under the presidency of Dr. Nicholas Murray Butler. At present there are several societies which include manual training in their scope of activities, but most of them deal with the larger sphere of industrial or vocational training.

Massachusetts supplemented her act of 1872 by approving an act in 1884 relating to instruction in the elementary use of hand tools in public schools. An act providing for the establishment of schools for industrial education was approved in New Jersey, March twenty-fourth, 1881. This was followed by an act for the promotion of manual training, approved February fifteenth, 1888. In New York an act was passed in 1888 entitled: "An act to authorize the establishment and maintenance of departments for industrial training and for teaching and illustrating the industrial manual arts in the public schools and normal schools of this State." Pennsylvania approved an act June twenty-fifth, 1883, entitled: "An act authorizing central boards of education, in cities of the second class, to establish and maintain schools for instruction in the mechanic arts and kindred subjects."[23]

Although the terminology in these various acts is different, it would appear as though all of the acts, with the exception of the New Jersey act of 1881, refer to manual training. Owing to the fact that the acts are not mandatory, very few districts took immediate advantage of the provisions made.

New York City was one of the first cities to give manual training a thorough try-out in the grammar grades. In June, 1887, a special committee of the Board of Education submitted a report to the board containing an outline of a course of instruction in manual training. This report was adopted by unanimous vote of the board. The board then directed that after the course and manual should be prepared, "manual

[22] United States Commissioner's Report, 1886–87, p. 790.

[23] These acts are given in the Report of the Pennsylvania Commission on Industrial Education, 1887-89, pp. 28-34.

training should be tested in a limited number of grammar schools, not to exceed six male departments and six female departments, together with those primary schools and departments only that promote to the same, and that a reasonable time be allowed for the experiment."

In the same year a resolution was approved by the Governor of Pennsylvania which authorized him to appoint a commission to make inquiry respecting the subject of Industrial Education. The resolution provided that the commission should make an examination of the extent to which industrial education is already carried on in Pennsylvania and elsewhere; the best means of promoting and maintaining it in its several grades, whether by State or local action alone, or by both combined; how far it is possible or desirable to incorporate it into the existing system of public instruction; the best method of training teachers for such schools or departments, and what changes, if any, are required in the existing system of normal schools to enable them to provide such training.

"Industrial education" was interpreted by the committee as follows: "Industrial education, therefore, we understand and use as meaning primarily education; education with reference to practical life, but still education; the training of the hand, the eye, and the brain to work in unison; the training of the whole child in such a way that his inward powers may act effectively through fit instruments upon his external surroundings, and receive from them in turn accurate and informing impressions. It involves both the idea of manual training with reference to its industrial applications and the idea of educational or intellectual training which, with reference to industries, must be largely on the scientific side."[24]

The committee made a thorough and exhaustive investigation of industrial and manual training both in this country and abroad. The results of its research were embodied in a comprehensive report, consisting of 588 pages. In its recommendations, the committee suggested that manual training should be introduced in the public school system and that those

[24] Report of the Pennsylvania Commssion on Industrial Education, 1887-89, p. 4.

prospective teachers enrolled in normal schools should be required to complete at least the equivalent of a six-weeks' course in wood work.

Notwithstanding the growing popularity of the manual training movement, it was not yet firmly or widely established in 1890. At that time Mr. Chas. H. Banes prepared a paper on the "Manual Training and Trade Schools in 1890" for the trustees of the Williamson Trade School. He deplores the lack of instruction in manual training in the public schools and states that "The class of boys who would apply for admission into the Williamson Trade School would to a great extent come from the public schools, and without previous training in manual work. This condition of our public school system would seem to indicate the necessity for preliminary work at the Williamson School, in the establishment of a primary preparatory department of manual training before the work of the trade school is entered upon."[25]

It was about this time, also, that those who were opposed to manual training attacked it most vigorously. The movement did not have easy sailing. Many of the educators of the country could not adjust themselves to the idea of introducing manual effort into a scheme of education which they felt should be purely intellectual. The bitterness with which the opponents of manual training attacked it can be readily appreciated if a few paragraphs be quoted from the Report of the Committee on Pedagogics to the National Council in July, 1889. The subject of the report is "The Educational Value of Manual Training," and it is signed by George P. Brown, S. S. Parr, J. H Hoose, and W. T. Harris, former United States Commissioner of Education.

The following statements are made:

"The subject of the Educational Value of Manual Training has come to be of prime importance by reason of the fact that as a cause it serves to unite not only the critics of the educational system already existing, but also its uncompromising enemies."[26]

[25] Chas. H. Banes, "Manual Training and Trade Schools in 1890," p. 12.

[26] C. M. Woodward, "The Educational Value of Manual Training" D. C. Heath & Co., 1890, p. 85.

"Your committee understands that any amount of manual training conducted in a school is no equivalent for the school education in letters and science, and ought not to be substituted for it.

"Just for the very reason that the majority have before them a life of drudgery, the period of childhood, in which the child has not yet become of much pecuniary value for industry, shall be carefully devoted to spiritual growth, to training the intellect and will, and to building the basis for a larger humanity.

"The economic, utilitarian opposition to the spiritual education in our schools comes before us to recommend that we forecast the horoscope of the child, and in view of his future possible life of drudgery, make sure of his inability to ascend above manual toil by cutting off his purely intellectual training, and making his childhood a special preparation for industry.

"The illiterate manual laborer, no matter how skillfully educated for his trade in wood and metal operations, cannot read or write.

"Work in the trades that deal with wood and metals (and these include the entire curriculum of the manual training school) would be disadvantageous to the delicate touch required by the laborer on textile manufactures.

"To be excellent in manual training would not prevent him from being illiterate and a bad neighbor and a bad citizen—even a dynamiter."[27]*

Several other paragraphs might be quoted, but the above is sufficient to show the attitude of the committee. The agitation in behalf of manual training was still in its infancy at this time, and such an arraignment by a committee composed of men of considerable standing in educational circles could not help but have a deterrent influence.

The unreasonableness of the attack is now manifest, and at the time it was issued was unfair. It is quite evident that

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[27] C. M. Woodward, "The Educational Value of Manual Training," D. C. Heath & Co., 1890, pp. 86-93.

*For a reply to this report see Woodward, "The Educational Value of Manual Training," D. C. Heath & Co., 1890.

the committee was either prejudiced against manual training, or else did not acquaint itself with the facts as they existed. The whole argument was hurled against a type of school in which trades only were taught, and against them unjustly, whereas the better type of manual training schools, which the committee was to discuss, divided the time about equally between manual and academic branches.

In spite of the opposition to the manual training movement, it enjoyed a gradual growth during the decade following the year 1890. In 1900, 169 cities of over 4,000 inhabitants are reported in which the public schools offered courses in manual training. During the last twenty years the growth has been almost phenomenal. In 1905, there were 420 cities of over 4,000 inhabitants with public schools offering courses in manual training; in 1908, 671 cities; in 1911, over 700 cities.

The introduction of manual training has been greatly facilitated by legislation in many states. The National Society for the Promotion of Industrial Education has compiled the laws of the several states on Industrial Education. In calculating statistics, schools of secondary grade only are considered. The number of states providing for manual training is 18, or 37%. The number providing state aid for manual training is 9, or 19%.

All the manual training of secondary grade thus far provided for by state legislation may be classified as compulsory, permissive, and subsidized. Massachusetts is the only state which has enacted a statute enforcing instruction in manual training. By the acts of 1894 and 1898, Massachusetts required cities of twenty thousand inhabitants to include manual training in their elementary and high school courses. This law contained no provision for its enforcement and has not been very extensively observed. (Chap. 471, Acts 1894; Sec. 4, Chap. 496, 1898.) The following states permit manual training by laws enacted: Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Nevada, Ohio, Oregon, Pennsylvania, and Wyoming. The following states subsidize manual training: Kansas, Maryland, Michigan, Minnesota, New Jersey, Texas, Vermont,

Virginia, and Wisconsin.[28] Up to June 1911 no further legislation was enacted with respect to manual training.[29]

An appreciation of the position held by manual training in education is indicated by Professor James when he says, "The most colossal improvement which recent years have seen in secondary education lies in the introduction of the manual training schools; not because they will give us a people more handy and practical for domestic life and better skilled in trades, but because they will give us a citizen with an entirely different intellectual fiber. Laboratory work and shop work engender a habit of observation, a knowledge of the difference between accuracy and vagueness, and an insight into nature's complexity and into the inadequacy of all abstract verbal accounts of real phenomena which, once wrought into the mind, remain there as lifelong possessions. They confer precision; because if you are doing a thing, you must do it definitely right or definitely wrong. They give honesty; for when you express yourself by making things, and not by using words, it becomes impossible to dissimulate your vagueness or ignorance by ambiguity. They beget a habit of self-reliance; they keep the interest and attention always cheerfully engaged, and reduce the teachers' disciplinary functions to a minimum."[30]

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[28] Bulletin No. 12, National Society for the Promotion of Industrial Education, Nov., 1910, pp. 57-60.

[29] United States Commissioner's Report, 1911, p. 149.

[30] William James, "Talk to Teachers," p. 35.

CHAPTER II

Conditions Which Led to the Introduction of Manual Training: Obstacles Which Retarded its Growth

In attempting to interpret the progress of the world, the political economist would have us believe that every improvement or advance made in civilization may be reduced to economic terms. In such manner does he explain war, commerce, the introduction of money, industrial evolution, the abolition of slavery, and so on. He contends that every event of moment or advance in civilization has its cause and effect; the cause always an economic one, whatever the effect may be.

We may readily imagine then, that the economist considers that the introduction of manual training into the educative process has been due, primarily, to economic reasons. And conditions seem to warrant this contention. For years, after colonization had been started in this country, the settlements had comparatively few inhabitants; land could be had in abundance by those who had sufficient perseverance to clear and cultivate it, and industries did not exist except those that could be performed at the home. Such were the conditions under which our forefathers lived, up to the beginning of the nineteenth century.

At that time the United States was a nation which had just secured its freedom. Its policy consisted largely of experiment and trial. Many of its natural resources were unknown and others were but imperfectly developed. Travel was undertaken only when necessary because of its slowness and tediousness. The mail service was inadequate, hence correspondence was not extensively used. Labor-saving devices were yet to be invented as an aid to the nation in its effort to secure and maintain a prominent position among the powers of the world.

The frontier life of that period required resourceful and self-reliant men. It required that they should have initiative and

perserverance in order that the natural resources of the country might be developed and exploited. How well these requirements were met is witnessed by the fact that the United States has enjoyed the most phenomenal growth of any nation in history. It has become one of the most powerful and one of the most wealthy nations of the day. But with this miraculous growth have occurred three changes which are of particular interest in connection with the present discussion: 1. The population has been changed from a distinctly rural community to one which is largely urban. 2. Land which was practically free is about exhausted. 3. There has been a wonderful industrial development in the country, which has absorbed many of the industries which were formerly performed in the home.

During the past one hundred and fifty years our population has increased thirty-fold, and invention and industry have been instrumental, to a large extent, in concentrating a large percentage of this population in the cities. In 1790 there were but six cities of eight thousand inhabitants, or more, in the United States; in 1810 there were eleven such cities; in 1830, twenty-six; in 1840, forty-four; in 1890, the number of such cities had increased to four hundred and forty-eight; and according to the last census report, 1910, the number reached was seven hundred and sixty. In 1790, the urban population was one in thirty of the total population; in 1840, one in twelve; and at the present time, it is about one in three.

At the beginning of the nineteenth century, land could be readily obtained by those who desired it. Vast tracts were available, only awaiting the coming of the frontiersman. As the population increased, so, also, did our boundary line become extended.

As the line of civilization kept creeping to the west, the more adventurous spirits pushed further on. If the environment of the city or town did not suit the tastes of an individual, he could easily find a place on the frontier with practically no expense other than the hardships which must necessarily be endured. But this mode of life has about reached its limit. The land which could be obtained for little or nothing is almost exhausted. The individual must now be content with city

life or else pay a substantial price for land in the country which can be profitably cultivated.

But the most remarkable change that has occurred since the formation of the United States has been in the industrial world. At the time of the Declaration of Independence there were many home industries, division of labor was in its infancy, and many of our manufactured articles were obtained abroad.

Flax was raised and sheep were sheared on the farm. The flax was dried, hetcheled, spun, and woven; the wool was washed, carded, spun, and woven. Then the clothes, blankets, linens, and whatever other cloth materials were needed, were made at the home. Mittens and stockings were knitted, bread was made, butter was churned, fruits were dried, soups were prepared, and clothes were washed; all these activities were performed by the housewife. The men cut the grain with the scythe and flailed it by hand; in fact, practically all the farmer's labor was performed by hand. During this period, about 96% of the population of the United States lived in rural communities. Now in a great many homes, most of these industries that were performed in the home are taken care of by the factory, the bakery, the dairy, the cannery, and the laundry. We even have the vacuum cleaner, which further reduces the labor of the housewife by effectively cleaning the house with the expenditure of but little effort. The hard manual labor, once performed by the farmer is now done much more quickly by the aid of machinery.

It is not so many years since our shoes were made in their entirety by one person; the same may be said of our clothing and many other articles of every-day usefulness. But now we find that through the divisions of labor which have become more and more specific and highly organized, the manufacture of a single pair of shoes or a single suit of clothes requires many different operations, to each of which is assigned a particular individual whose sole duty is to attend to that particular operation.

"The early forms of industry gave the worker a relatively broad outlook; division of labor and specialization of industries tend to narrow this vision. As the division becomes more and more minute, the production of goods requires the co-operation

of a constantly increasing number of workers. Each one forms but a link in a great industrial chain, and consequently sees only a minute part of the entire operation necessary to make the completed article. Machine production aims at making a uniform and interchangeable product. The workman is unfortunately bound down to a rigid and monotonous routine; he becomes in time almost automatic in his movements. He struggles blindly on, working and producing, without recognizing the end in view, without feeling that he, himself, is an integral and necessary factor in the formation and operation of a great industrial machine or organism."[21]

The number of persons engaged in industrial pursuits has kept pace pretty well with the industrial development. At times we hear that the labor market, both skilled and unskilled, is overstocked, and again we hear that is is underfed, but under normal conditions the earnest workers can find employment and the fair employer can obtain workers. Our distribution in various occupations can be seen from the occupational groups in the United States, 1900.

Occupational Groups	Number
Agricultural Pursuits	10,381,765
Professional Service	1,258,538
Domestic and Personal Service	5,580,657
Trade and Transportation	4,766,964
Manufacturing and Mechanical Pursuits	7,085,309
Total	29,073,233 [22]

The number of those, included in the above, who are engaged in what may be called "cultural occupations" is surprisingly small.

Teachers and Professors in College	446,133
Clergymen	111,638
Authors and Scientists	18,844
Journalists	30,038
Lawyers	114,460
Officers, local, state, and national	86,607

[21] F. T. Carlton, "Education and Industrial Evolution," p. 48.

[22] "Statistical Abstract of the United States," 1911, p. 235.

Actors	34,760
Artists and Teachers of Art	24,873
Musicians and teachers of Music	92,174
Dentists	29,665
Physicians and Surgeons	132,002
Total	1,121,194[33]

During the past century also, the position of women, owing to different social, industrial, and educational conditions, has been entirely changed. Formerly her place was in the home; now she enters into competition with men in almost every pursuit. According to the census of 1900, there were 21,776,864 females in this country between the ages of fifteen and sixty; 5,319,397 females, ten years of age and upwards, are engaged in gainful occupations, of whom 485,767 are between the ages of ten and fifteen years.[34] It is fair to assume that the majority of them are employed in cities and large towns. As labor-saving devices for the care of the household are introduced into more homes, the proportion of the female wage earners will undoubtedly increase.

We have, then, these three economic factors which have been working independently of each other for many years, but which have been very closely correlated. The exhaustion of public lands and the development of industries have both been instrumental in directing the people toward the city. The significance of these factors, in their relation to the educational sytem, can best be revealed by determining whether our work in education has kept pace with them. Have the needs of the great army, who are engaged in industrial work, been properly provided for by the school; are the millions of women, who are now employed outside the home, being so trained that they will be well fitted to take up the burden of earning a living; and are the millions of other women who do the home-keeping receiving the training requisite for their future betterment and happiness? The answer to these questions may be found in the demand made for manual training over thirty years ago, and in the agitation at the present

[33] "Statistical Abstract of the United States," 1911, p. 235.
[34] *Ibid.*

time for a change in the educative process. The too strict adherence to academic subjects gave the general impression that the public school had not kept pace with the changed industrial and economic conditions, hence the demand for the introduction of manual work in the school. Perhaps this demand was not made by the people in so many words, but the lack of attendance and the great numbers of pupils that dropped out have been ample evidence that the school did not properly fill its mission.

Educators have realized for a long time that the public school system was in some way inadequate,—that it was not holding the children in school. It was felt in a rather indefinite way that the conditions enumerated above had something to do with the difficulty,—but it was not until careful and scientific investigations were made that the causes stood out clearly. Professor Thorndike, who made a thorough study of the elimination of pupils from schools, estimates that the general tendency of American cities of 25,000 inhabitants and over is, or was at about 1900, to keep in school out of 100 entering pupils 90 till grade 4, 81 till grade 5, 68 till grade 6, 54 till grade 7, 40 till the last grammar grade (usually the eighth but sometimes the ninth and rarely the seventh), 27 till the first high school grade, 17 till the second, 12 till the third, and 8 till the fourth. It will be remembered that the figures for public schools in the country as a whole are probably much lower that this.[35] He goes on to say that "one main cause of elimination is incapacity for, and lack of interest in, the sort of intellectual work demanded by present courses of study."[36]

This condition leads to a consideration of two factors that might be called "preventive causes," i. e., manual training was strongly opposed because of these two elements: 1. The strong belief held by many that the sole aim of the school should be a cultural one. 2. The domination of the college over the high school, which in turn dictates the course in the lower grades.

It is a well known fact that Massachusetts was the fore-runner in education in America. The Pilgrims were a religious people,

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[35] E. L. Thorndike, "The Elimination of Pupils from School," Government Printing Office, Washington, D. C., 1908, p. 11.

[36] *Ibid*, p. 10.

many of whom were highly educated. They had had schools at home, hence it was expedient that they introduce schools in the new country. Furthermore, if their children were to be brought up properly, they must be taught to read, that they might read and interpret the Scriptures for themselves. Consequently, on Nov. 11, 1647, the general court enacted a general school law which ordered "That every township in this jurisdiction, after the Lord hath increased them to the number of fifty householders, shall then forthwith appoint one within their town to teach all such children as shall resort to him to write and read,——; and

"It is further ordered, that where any town shall increase to the number of 100 families or householders, they shall set up a grammar school, the master thereof being able to instruct youth so far as they may be fitted for the University. Provided, that if any town neglect the performance hereof above one year, that every such town shall pay five pounds to the next school until they shall perform this order."[37] Previous to this date, Harvard had been established, so that by this Act provision was made for a continuous course of instruction through the University.

"The supreme problems which presented themselves to the leaders in early Massachusetts history were intellectual problems, —problems of church and state. To establish and develop a self-governing community under the new conditions which confronted them demanded intelligence of a high order and widely diffused. These men, themselves educated in the most advanced learning of the time, saw in the study of classic languages and mathematics a means of developing the power of concentrated and sustained thought, of clear and logical reasoning, and of balanced judgment. They believed that the study of the history and literature of the past tended to widen the horizon of thought, to bring to the solution of the problem of today the experiences of yesterday, so that the successes and failures of other peoples in other times might serve as guides and warnings for people here and now. They called this a liberal education—an education that liberated, that freed from the bondage of narrow and

[37] Hinsdale, "Horace Mann and the Common School Revival in the United States," p. 4.

local prejudice, and made the vision of life keen and far-sighted."[28]

It is to be observed that, according to the provisions of the act of 1647, all the children who might apply were to be taught reading and writing. To these, arthimetic was added some time afterwards. It was the specific duty of the grammar school to prepare for the university. The task of the university was to prepare its students to take up the problems of Church and State. The curriculum of the college consisted largely of Latin, Greek, History, Literature, a little Mathematics, Logic, and Theology. The whole procedure was distinctly cultural. No provision was made for the manual worker other than reading and writing.

Many of the other New England States followed the laws established by Massachusetts. Connecticut, New Hampshire, Maine, and Vermont were all more or less dependencies of Massachusetts and followed her educational institutions to a certain extent. The other states were for many years far behind the New England States in matters pertaining to education. "For this there were many reasons, some external and some internal. Nowhere outside of New England do we find that intense town life which did so much to stimulate men's minds, including schools and learning. And nowhere else save among the Scotch Irish of the frontiers did the prevailing types of religious belief and ecclesiastical organization tend so strongly to diffuse intelligence and promote education. There was a wide interval between the planters of the South, for instance, and the farmers, lawyers, ministers, and tradesmen of the New England States. Learning held no such place in the minds of the one as in the minds of the other. The typical Virginian was a man of vigorous faculties, knowledge of the world, force of character, and book education sufficient for his purposes;—but he was no theologian, dialectician, or scholar."[29]

Writing in 1824–1825, Mr. James G. Carter, to whom Dr. Barnard gives the credit of having first attracted the attention

[28] "Report of the Massachusetts Industrial Education Com.," p. 8.

[29] Hinsdale, "Horace Mann and the Common School Revival in the United States," p. 34.

of the leading minds of Massachusetts to the necessity of immediate and thorough improvement in the system of free or public schools, states that the subjects taught in all the schools were reading, spelling, and English grammar; in the better schools, writing, arithmetic, history, and geography were taught in addition.[40] Horace Mann was largely responsible for the introduction of hygiene, which practically completed the list of subjects up to the time when manual training was introduced. The scope of the work of the various subjects mentioned was extended and amplified, but mental work only was deemed of importance.

This same period also "witnessed the gradual destruction of domestic industry and the development of the factory system. Improvements and inventions in various lines of manufacture and communication followed each other in rapid succession. The Embargo Act, the War of 1812, the shipping regulations of foreign nations, adopted subsequent to the war, and the westward movement tended to rapidly shift capital and enterprise, particularly in New England, from commerce to manufacture. Canal and railroad building followed, immigration multiplied rapidly, the towns increased in size and importance, manufacture became an important economic interest."[41]

Notwithstanding these constantly changing conditions, the cultural form of education, which was outlined for the benefit of those who were to have charge of Church and State affairs, was still considered to best fit the needs of everyone. The form had changed very little, but the scope was greatly enlarged. Those who had entered industrial and mechanical pursuits, and the girls who were now permitted to enjoy the privileges of an education, could all be educated to the best advantage by pursuing this same course of study. The theory seems to have been that that which educates for culture educates also for life-work.

In fact, the cultural value of education became so deeply embedded in the minds of educators, that when the demand for manual training was made, it was based mainly on the argument that it possessed elements of culture peculiar to itself.

[40] Hinsdale, "Horace Mann and the Common School Revival in the United States," pp. 29 and 56.

[41] Carlton, "Educational and Industrial Evolution," p. 29.

Other arguments were presented, of course, but the chief one represented the cultural value of manual training in order to meet the strong opposition of those who feared the introduction of an utilitarian subject.

For a long time it was believed that the training and mental development, obtained by the pursuit of some of the time-honored subjects, as history, geography, mathematics, language, science, etc., was of such a character that it might be applied to other subjects or to vocations with equal force. At the same time culture was being acquired, a general knowledge of many subjects was obtained, which assured the individual of some social standing, perhaps, but did little toward aiding him in practical affairs. In recent years psychology has done much to discredit this view. The psychologists have questioned the belief that the mental characteristics acquired from the study of some one subject can be applied to the study of another subject with the same results. Furthermore, it has been argued that any one who follows a vocational course will necessarily become interested in allied subjects to such an extent that he will obtain whatever culture is necessary. If this be true, those who work in industries could readily make their leisure hours profitable. In any scheme of education it is essential that the work be so balanced that those who take part in it learn to make intelligent use of their leisure time.

In the early history of our country the grammar school and the academy were the closest approach to the high school of the present day. But the grammar school was subservient to the college, and the course of study was shaped according to college dictation. The function of the academy was principally to afford boys and girls who did not wish to go to college an opportunity to obtain a degree of general culture and practical efficiency. It was controlled by a close corporation and was rather expensive. Consequently, the demand arose that there be a school established differing materially from the grammar school and the academy, and that it be maintained at the public expense.

Boston was the first city to listen to the demand that such a school be established. In 1821 the "English Classical School" was opened. Its name was changed to the "English High School"

in 1824. The precedent set by Boston was followed by New York, when a high school for boys was established in 1825, and a similar school for girls in the following year; both of which, however, suspended operations in 1831.

The growth of the High School was very slow until 1860, when United States Commissioner Harris estimated that there were about forty in the country. Since that time the growth has been almost phenomenal. In 1870 there were 160 high schools; in 1880, 800; in 1890, 2536; in 1900, 6005; in 1911, 10,234.

It is to be remembered that when the high school was started there was no relation between it and the college. The original aim of the high school was that it should serve only those who did not want to go to college. Naturally, such a standard was thought to be too narrow as time went on. The feeling that a course should be introduced into the high school which would prepare for college became stronger and stronger. The colleges were not slow to realize that the high schools might become larger contributors to their respective student bodies, so they brought a powerful influence to bear upon the introduction of college preparatory courses. The argument was that what was a good preparation for college was a good preparation for life. This influence became so great that, for a long time, the colleges practically dominated the high schools and arbitrarily dictated entrance requirements, which the high schools had to meet.

The natural result of such an extreme position is that the pendulum has started to swing back, so that the argument of the colleges has been reversed, and the high schools contend that what is a good preparation for life is a good preparation for college.

As an outcome of this attitude on the part of the colleges, the high schools have demanded that certain changes be made in the college entrance requirements. At this point two questions present themselves:

1. What are the elements which have caused this revolt on the part of the high school?

2. What is the function of the college, or rather, what are the functions of college entrance requirements? Are they to determine the student's knowledge of certain branches, or are they an attempt to determine his fitness to do college work?

In relation to the first question, it is a well known fact that within the last forty or fifty years the entrance requirements in almost all of our colleges have been doubled. A brief review of the mathematical requirements will show this very clearly. In 1802, a knowledge of mathematics was, for the first time, required for entrance to Harvard. Even then the candidate was only required to cover Arithmetic up to the "Rule of Three." After 1816, the whole of Arithmetic was required for admission. In 1819 a trifling amount of Algebra was added. The catalogue of 1825 specifies the requirements as follows: Fundamental rules of Arithmetic; vulgar and decimal fractions; proportion, simple and compound; single and double fellowship; allegation, medial and alternate; and Algebra; to the end of simple equations, comprehending, also, the doctrine of roots and powers, and arithmetical and geometrical progression. In 1841, Euler's Algebra or the "First Lessons in Algebra" was required. No other changes were made until 1843. The catalogue for that year mentions for admission, Davies' "First Lessons in Algebra" to extraction of square root and an introduction to Geometry, from the most approved Prussian text books, to VII of proportion.[42]

As taken from the university catalogue, the minimum requirements in mathematics for admission in 1888–1889, were as follows: Algebra, through quadratic equations, and Plane Geometry. The requirements at the present time are essentially the same. But Harvard is more liberal in these requirements than most of the colleges and universities. The majority require Algebra, through progressions, Plane and Solid Geometry. The technical schools require even more advanced Algebra and Plane and Spherical Trigonometry in addition. In a little over a hundred years, the requirements have advanced from absolutely nothing to the list just given. The increase in the requirements in many of the other subjects have been proportionate.

In the second place, the high school is a tax-supported institution. Since there is less than one in six of those who go to the high schools that go to college, the community has a right to

[42] Cajori, "The Teaching and History of Mathematics," p. 131.

demand and the high school teachers appreciate the justice of the demand, that the courses of study should be so constructed as to be of the greatest benefit to the individual when he takes his place in the community.

Many colleges refuse to give credit for such courses. They suggest that if the high school feels obliged to meet the above condition it should establish a college preparatory course and a course which shall prepare for life. Such a policy is impracticable in the small communities, because of the greater expense that would be incurred. The high schools have endeavored to adapt themselves to new conditions which have arisen, whereas many colleges and universities have maintained their time-honored customs, have made no attempt to meet new conditions, and will give no credit for new subjects which have been introduced into the high school courses.

The second question presents greater difficulties. It ought to be fair to assume that one of the functions of a college is to permit a pupil to show that he can do college work, irrespective of how much knowledge he has in different subjects. Of course, certain college courses require a definite amount of preliminary work which is continued in college. For instance, it is not to be expected that a boy who has pursued a non-classical course should be admitted to the classical course in college. This work should be considered as essential under the favorable conditions, recommendations, etc., necessary before he is considered eligible to entrance in college. But I wish to emphasize the fact that when a student has completed his high school course satisfactorily there should be a course in the college or university ready to receive him.

The University of Illinois, a short time ago, sent the following statement to every high school principal in the State: "The chief purpose of your high school is to prepare the boy for the business of making a living, and the university believes, on the whole, that it will require as good a training to make him a success in life as it will to make him a success in the university. We propose, therefore, to leave you free to determine the needs of your community and to prepare your boys and girls for success in that community. We shall then admit them to such courses in

the university as will best supplement the education you have given them and best fit them for larger spheres of influence and of service." The stand taken by the University of Illinois is in accord with the recommendations of the Committee of Ten, which was appointed to investigate the articulation of the High School and College. In its report for 1893, we find the following: "There is a general principle concerning the relation of the secondary schools to colleges, which the Committee of Ten, inspired and guided by the conferences, find it their duty to set forth with all possible distinctness.

"The secondary schools of the United States, taken as a whole do not exist for the purpose of preparing boys and girls for colleges. Only an insignificant percentage of the graduates of those schools go to colleges or scientific schools. A secondary school program intended for national use must therefore be made for those children whose education is not to be pursued beyond the high school. The preparation of a few pupils for college or scientific school should in the ordinary secondary school be the incidental and not the principal object. At the same time it is obviously desirable that the colleges and scientific schools should be accessible to all boys and girls who have completed creditably the secondary school course—in order that any successful graduate of a good secondary school should be free to present himself at the gates of the college or scientific school of his choice, it is necessary that the colleges and scientific schools of the country should accept, for admission to appropriate courses of their instruction, the attainments of any youth who has passed creditably through a good secondary school course, no matter to what group of subjects he may have mainly devoted himself in the secondary school. As secondary school courses are now too often arranged, this is not a reasonable request to prefer to the colleges and scientific schools; because the pupil may now go through a secondary school course of a very feeble and scrappy nature, studying a little of many subjects, and not much of any one, getting perhaps a little information in a variety of fields, but nothing which can be called a thorough training."[48]

[48] J. F. Brown, "The American High School," p. 58.

Unquestionably, there is a great deal of truth in the final sentence of this general principle. In order that the demands of the high schools may have a hearing and be approved it is the duty of every high school principal to see to it that his course is such a one as may be included under the heading of a good secondary school course.

In some districts, notably the South, the high schools are not alone to blame. We find colleges catering to pupils who have not finished their high school course. As an illustration, I quote a statement from a recent report of Prof. William H. Hand, inspector of high schools of South Carolina. He states: "Reports show that the colleges of this and nearby states have in their college classes, from the schools of this state, nearly 200 pupils from the ninth grades and more than forty pupils from the eighth grades. One half the colleges of this state have now last year's tenth grade pupils in their sophomore classes." Under such circumstances it is not a surprise that the high schools in those districts were for a long time in a state of lethargy.

The demands of the high school may be briefly summed up as follows:

1. That the number and amount of required subjects be cut down.

2. That colleges admit by certificate.

3. That credit be given for standard subjects taught in high schools.

I. Many colleges and universities have recognized the reasonableness of the first demand and have diminished the number of required subjects. On the other hand, however, the number of specified subjects is so numerous and the fixed requirements so great in many instances that the high school principal is severely handicapped in the preparation of his course of study.

Some idea of the diversity of practice in the number of specified units for admittance to college may be had from a review of the statistics collected by the "Carnegie Foundation for the Advancement of Teaching." In 1909, there were 64 institutions on the accepted list of the Foundation, each of which required at least 14 units for admission.

The number of specified units required range all the way from none at Clark University to 14.5 at the New York University.

Nine of the universities require from none to 5, inclusive, specified units; 16 require from 5.1 to 8, inclusive; 28 require from 8.1 to 11, inclusive; 9 require from 11.1 to 14, inclusive; and 3 require more than 14 units. Only 5 specify the total number of units required for admission. Although these statistics are not exhaustive they give a fair idea of the general practice.

At a recent meeting of a New England Association of Colleges and Preparatory Schools the following motion was passed with but a single dissenting vote:

"I move that it is the sense of the Association that the requirements for admission to college would be improved by the introduction of changes or modifications in the direction of the six recommendations made by Dr. Farrand."

These recommendations were:

1. That elementary Algebra end with quadratics.
2. That in geometry a syllabus of essential propositions be made.
3. That the mathematical work in Physics be reduced.
4. That Latin and Greek composition be eliminated or reduced.
5. That in English requirements there shall be a reduction on the emphasis placed on the knowledge of specific books.
6. That the field in ancient history be reduced to reasonable limits.

A short time ago the High School Teachers' Association of New York City recommended, among other things, that but one foreign language be required for admission to college, and that a more liberal amount of electives in science be permitted.

The justice of the demand that but one foreign language be required for admission has been recognized by many colleges and universities, and they have accordingly adjusted their requirements to meet this request.

This is more particularly true of western institutions. The universities of Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Virginia, Wisconsin, and many others require one foreign language for admission, and quite a number do not require any.

II. Generally speaking, the East advocates entrance by examination, the North Central States favor the inspection plan, and institutions located in various parts of the country advocate entrance by certificate.

Those who advocate admission to college by examination contend that a better class of students is obtained by this system than by any other. But the objection is raised that those teachers who have charge of the instruction of pupils who are preparing for such examinations conduct their work with the ultimate view of preparing directly for those examinations rather than for the purpose of preparing for the duties and activities in life which the pupils will be called upon to perform. This objection seems to be sustained by the fact that the colleges which admit only by examination are the only ones which draw a greater percentage of students from private schools than from public schools.

The certificate plan has met with considerable approval both from the high school and the college, but even here the objection is raised that there is a tendency to shut out the average student from college privileges on account of the grades demanded.

The North Central States have been enthusiastic in their praise of the system of inspecting and accrediting high schools which the universities have developed. The objection to this system is that the control of the high school has been too strongly centralized in the university, which, in turn, has used the high school to its own end.

It is obvious that every system proposed would be open to criticism, but if the state department of education of each state would develop an efficient and sufficient corps of high school inspectors whose duty it should be to stimulate and encourage the high schools of the state and endeavor to have them maintain a course which could be considered a good secondary course, the objections would be minimized. This should, in no way, however, give the inspectors the power to dictate the course to be used in any given locality.

The colleges and the universities of the state should then admit a graduate of any such high school to some one of their courses.

III. Perhaps the most difficult problem that high school principals have to deal with in recent years, has been that the colleges and universities would not recognize or give credit for certain courses offered in the high school.

However, through the persistence and perseverance of the high school teachers and principals the outlook has become much more encouraging. According to a recent Bulletin of College Entrance Examinations issued by the United States Bureau of Education, there are now among 203 colleges of liberal arts, 97 which recognize shopwork, 88 commercial subjects, 80 agricultural, and 79 household science. The institutions which recognize for entrance any subject that an approved high school counts in its graduation requirements are growing, except apparently among women's colleges.

A few colleges give credit for all well conducted courses in the high school, and many others have adjusted their entrance requirements so as to give credit to some of the vocational subjects, but there are still a great many colleges and universities which have thus far turned a deaf ear to all arguments. It is to these institutions that the high schools must continue to make their appeal.

The Committee on College Entrance Requirements in Mathematics and Science, appointed in June, 1909, submitted resolutions for adoption in 1911, among which were the following:

"Whereas—The present high school courses have been subjected to trenchant criticism, especially from the industrial and business worlds, chiefly because present courses give insufficient attention to vocational training or to the future work of the child, and this has been one of the causes contributing to the loss from the high school of both boys and girls who would profit largely by courses that would more directly prepare them to meet the actual demands of business and of manufacturing life; and

"Whereas—Although we recognize the great benefits that have come in the past to the secondary school through college entrance requirements, we yet believe that the present excessive severity of these requirements along certain traditional lines and the failure of the colleges to recognize the educational value of vocational courses toward college admission, are conditions which very seriously hamper the freedom of the secondary schools and prevent necessary investigation, repeated experiment, and successful development of courses to meet present needs and educational growth: therefore be it

"Resolved—That we request the college to consider whether the work done by its students in college does not in large part furnish a better basis for testing the efficiency of school preparation than do the present methods of entrance examination and of official inspection; and

"Resolved—That as we consider the larger and the more important duty of the secondary school is the preparation of the students for immediate entrance upon useful life in their communities, we believe the college should cease to discriminate against subjects that the schools find necessary in preparing their pupils for such studies."[44]

The new entrance requirements of Michigan, Chicago, Harvard, and Pennsylvania are now formulated very much along the lines suggested in this report. While Harvard continues to demand examinations, they are less objectionable both in number and in form than of old, and mark real progress in the direction of giving the school sufficient freedom. The demands of the colleges named above are now so rational as to give little reason for criticism.

Quite recently the High School Teachers' Association of New York City has taken a step which should bear fruit and which other high school teachers' associations might profitably follow. A committee was appointed to investigate the present college entrance requirements and to endeavor to bring about a better articulation of the high school and college. The committee suggested two methods of improving the situation:

1. "That college entrance be based upon the simple fact of graduation from a four years' course in a first class high school."

2 (*a*). "That the so-called 'required' subjects be reduced, together with"

(*b*) "The recognition of all standard subjects as elective."

"The specified entrance requirements of two foreign languages, the meager electives in science, and the absence of recognition for drawing, music, household sciences and art, shopwork, commercial branches, and civics and economics, constitute the chief difficulty."

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[44] "School Science and Mathematics," 1911, Vol. 11, pp. 371–373.

A number of important state and sectional organizations have declared, as one of their aims, the promotion of a better understanding between secondary schools and colleges. But notwithstanding the efforts of these organizations, there is still considerable dissatisfaction among high schools with the present entrance requirements and methods of admission. It is to be hoped that the work of the colleges and the high schools may be more perfectly harmonized in the near future.

CHAPTER III

Effect of the Introduction of Manual Training upon American Education

In a discussion of the merits of manual training, as in many other new projects, its advocates have many times made extravagant claims for it, and its opponents have made many equally bitter attacks upon it. A number of opinions might be given on both sides of the question, but one of each will be sufficient to make this point clear. The following is taken from an article by Mr. W. N. Hailman:

"Manual training is proving its value as an efficient educational factor, not only in the development of manual skill, but also in the enrichment and invigoration of the intellect, in the direction and strengthening of the will, in the establishment of the healthy moral attitude, and in the nature of public spirit."[45] Again, "Whatever course in the high school the child may enter (presumably manual training in the grades is referred to here) he will carry there with him the habits of patient research, of rational thinking, of solid judgment, of creative fervor, of mobile skill, and calm self-reliance—in short, of all-sided efficiency, which no other training can give him. And by these alone can he climb to mastership in life."[46]

Were these claims true, practically all our educational problems would eventually disappear. But they appear to be without foundation in many instances and are based on no statistics or observations. That such results are desirable is undeniable, but the mere fact that manual training may produce such results does not warrant anyone in making the statement that it does. Even if it be granted that the child acquires all these

[45] W. N. Hailman, "Educational Aspects of Manual Training," in the "Pedogogic Quarterly," Oct., 1899, Vol. 1, No. 4, p. 1, E. L. Kellog Co.

[46] *Ibid.*, p. 18.

characteristics, there are so many other influences to be considered that it is not safe to assume that they are benefits derived only from manual training. On the other hand, when the movement for manual training schools was first being inaugurated in the United States, Dr. Wm. T. Harris, who was one of the leading educators of the day, as chairman of a committee on Pedagogics, strongly opposed it, and in the course of a report in 1889, to the National Council of Education, stated that the argument that manual training cultivates the powers of attention, perseverance, and industry, is misleading, because they are formal powers and not substantial. They derive their value from what they are applied to, and they may be mischievous as well as beneficial.[47] Dr. Harris did not seem to appreciate the fact that the same argument may be turned against any of the recognized academic studies. For many years it has been contended that mathematics, languages, history, and other academic studies have cultivated these same powers. Such being the case, these subjects might produce mischievous as well as beneficial effects, and consequently have the same objections raised against them as the committee raised against manual training.

Manual training is no longer an experiment. It has been in use in this country for over twenty-five years and is now so widely diffused that it has become an integral part of the public school curriculum. It has been given sufficient time to demonstrate its usefulness and its adaptation to present day conditions.

When the movement was still in its infancy, Dr. C. M. Woodward,[48] of the St. Louis Manual Training School, suggested several results which might be expected to follow the introduction of manual training. These results are submitted for two reasons. First, because they include most of the results usually

[47] "The Educational Value of Manual Training," Report of the Committee on Pedagogics, National Council of Education, July, 1889. In Appendix of Woodward, "The Educational Value of Manual Training," D. C. Heath & Co., 1890.

[48] These 18 results are quoted from C. M. Woodward, "The Manual Training School," Chapter VIII, pp. 212–213.

given by advocates of manual training; second, because they were suggested twenty-five years ago, so that, after an experience of that length of time, it can be determined, to a large extent, whether the prophecies made have come true.

"The value of manual training, when properly combined with literary, scientific, and mathematical studies, will be shown in the following ways:

"1. Science and mathematics will profit from a better understanding of forms, materials, and processes, and from the readiness with which their principles may be illustrated.

"2. Without shopwork, drawing loses half its value.

"3. Correct notions of things, relations, and forces, derived from actual handling and doing, go far toward a just comprehension of language in general; that is, manual training cultivates the mechanical and scientific imagination, and enables one to see the force of metaphors in which physical terms are employed to express metaphysical truths."

A.—Numbers 1, 2, and 3 would probably hold true if mathematics, science, drawing, and language work were closely correlated. Unfortunately, this is not always the case. The progress in this direction one would expect after a period covering twenty-five years has not been made. There have been a few books on practical mathematics published, and the new books are devoting more and more space to practical problems, so that we may hope for more definite results in the near future. In order to make mechanical drawing effective it is absolutely essential that it be correlated with the manual training, yet frequently we find them divorced entirely. Whenever possible, working drawings of the objects to be made should first be required. If the teachers of the manual training and the teachers of other subjects would confer and map out a course whereby each subject would be taught so as to bring out its relation to the other branches, better results might be obtained.

"4. Manual training will stimulate a love for simplicity of statement and a disposition to reject fine sounding words whose meaning is obscure."

B.—Number 4 is of no significance whatever. Just as a boy at one period of his life has an inclination to jump from high

places, at another period to display his physical prowess, so at a third period he has a desire to use large and fine sounding words. Difference in training would hardly affect him, and even if it did the advantage gained would be of small moment.

"5. It will awaken a lively interest in school, and invest dull subjects with new life."

C.—Number 5 may or may not be true. There is testimony to support this claim, but my own experience has been that it does not invest dull subjects with new life to any great extent. Testimony of others with whom I have conferred agrees with my own conclusion. Mr. C. T. Lane, Principal of the Highland Manual Training School, Fort Wayne, Indiana, states:

"Our experience points straight to the conclusion that boys, if left to themselves, will tend to neglect their academic studies in favor of their shop work, and this conclusion of experience is confirmed by correspondence with principals of other schools."[49]

"6. It will keep boys and girls out of mischief, both in and out of school."

D.—Number 6 offers no reason either for the introduction or the maintenance of manual training. Cases of discipline can be handled with much less expense and in much less time than the time devoted to teaching manual training. At the same time, it must be admitted that manual work has improved the discipline in particular schools.

"7. It will keep boys longer at school."

E.—Number 7 will be discussed later.

"8. It will give boys with strong mechanical aptitudes and fondness for objective study an equal chance with those of good memories for languages."

F.—Number 8 is no doubt true, for the innate tendencies of all individuals are not the same. At least it should make the school work much more interesting for those who have strong "mechanical aptitudes."

"9. It will materially aid in the selection of occupation when school life is over."

G.—Number 9 involves a question that it is extremely difficult to answer. That it is true in individual cases is almost a

[49] "Report of Public Schools," 1907, Fort Wayne, Indiana, p. 58.

certainty, but whether it occurs in a sufficient number of cases to warrant its being called a result is another matter. Even though statistics were available on the matter there would be no surety that it was not some other factor that influenced the selection of occupation. In many cases, particularly in industrial districts, the boy would probably enter into industrial work whether he had received manual training or not, so that the selection could not be ascribed to his training. Furthermore, it is quite possible that the manual training may be instrumental in leading many boys to take up mechanical work who might otherwise have followed some profession and thus placed themselves in more enviable positions. The tendency among boys is, too frequently, to follow the line of least resistance.

The Alumni Association of the Northeast Manual Training School of Philadelphia has compiled statistics relating to the occupations of the graduates of the school. This school has just completed its twentieth year.

Accountants	19	*Captain* (marine)	1
Actor	1	Chemists	32
Actuaries	2	Clergymen	7
Advertisers	18	Clerks (general)	109
Architects	31	Clerks (chief)	10
Artists	12	Clerks (bank)	44
Assayers	2	Clerks (railroad)	60
Attorneys at Law	37	Clerks (postoffice)	9
Agents (Railroad)	6	Collectors	6
Agent (Immigrant)	1	Consul	1
Bakers	3	*Contractors*	16
Banker	1	Dairymen	2
Baseball (Professional)	3	*Decorators*	6
Blacksmiths	2	Dentists	16
Bookkeepers	67	*Designers*	24
Builders	10	*Draughtsmen* (architect)	22
Buyers	10	*Draughtsmen* (chief)	12
Bricklayers	2	*Draughtsmen* (mechanical)	229
Brewers	2	*Draughtsmen* (marine)	12
Brokers	8	Druggists	15
Carpenters	3	Dyers	3
Cashiers	10	Estimators	10
Caterer	1	*Electricians*	61

Editors	5	Osteopaths	6
Engineers (civil)	93	*Pattern Makers*	11
Engineers (consulting)	14	Photographers	5
Engineers (chemical)	7	Physicians	60
Engineers (electrical)	49	*Plumbers*	15
Engineer (marine)	1	*Printers*	22
Engineers (mechanical)	62	Principals	4
Engineers (mining)	9	Private Secretaries	2
Engineers (railroad)	6	Purchasing Agents	5
Engineers (structural)	5	Presidents	19
Engravers	2	Publishers	3
Examiner	1	Railroad Supervisors	6
Experts	6	Real Estate Brokers	52
Farmers	9	Ranchmen	2
Firemen	2	Stenographers	13
Florists	5	Superintendents	56
Foresters	2	Salesmen	124
Foremen	15	Salesmen (traveling)	44
Grocers	5	Surveyors	42
Instrument Makers	10	Secretaries	23
Inspectors (medical)	4	Sales Managers	15
Inspectors (miscellaneous)	30	Treasurers	15
Insurance Agents	21	Transitmen	6
Jewelers	4	Tellers	10
Laundrymen	4	Truant Officer	1
Lumber Dealers	7	Tailors	2
Machinists	33	Teachers (college)	21
Manufacturers	44	Teachers (high school)	31
Mechanicians	3	Teachers (elementary school)	21
Merchants	64	Teachers (private school)	6
Miller	1	Teamsters	2
Musicians	8	Undertakers	3
Managers	74	Veterinary Surgeons	9
Missionaries	2	Vice Presidents	7
Newspaper Editors	2	Writers	2
Newspaper Reporters	6	Y. M. C. A. Secretaries	2
Orchardist	1	Y. M. C. A. Physical Directors	2
Officers (army)	3	In Higher Institutions of Learning	308
Opticians	5		

"10. It will enable an employer of labor to better estimate the comparative value of skilled and unskilled labor and to exercise a higher consideration for the laboring man."

H.—It is quite probable that Number 10 is true. The assumption is that the comparison is made between two boys

of the same ability—one of whom has had manual training and the other has not had any such training. If they be given parallel positions where a knowledge of manual work could be used to advantage, a comparison between the skilled and the unskilled could be made—to the credit of the former without doubt. Dr. Woodward endeavored to secure facts relative to this point and quotes several letters from employers which support this suggestion.

"11. It will raise the standards of attainments in mechanical occupations, and invest them with new dignity and worth.

"12. It will increase the bread-winning and home-making power of the average boy, who has his bread to win and his home to make."

I.—Numbers 11 and 12 are simply assumptions that will have to stand as such. It is to be hoped that they are true. In this connection it is interesting to note that some time ago Dr. Talcott Williams took the table of occupations in the United States Census of 1900, analyzed it, and pointed out that out of 30,000,000 engaged in these occupations, only about 4,000,000, or about one in seven, are persons who would be directly benefited in wage earning by manual training or other mechanical work of the sort which is taught in the schools.

"13. It will stimulate invention. The age of invention is yet to come and manual training is the very breath of its nostrils."

J.—Whether manual training has stimulated invention or not is another question which cannot be definitely answered. The whole number of patents, including designs, issued up to 1890, when manual training really obtained a good start, was about 400,000; up to January 1st, 1901, about 700,000 had been issued, and during the past year the number reached the one million mark. How many of these patents have been taken out by individuals who have had manual training, and how much influence this training may have had in furnishing the new idea, it is impossible to say. It would be interesting to have statistics on this point. But it is certainly reasonable to suppose that when a large number of individuals have become familiar with tools, by the aid of manual training, and who otherwise would have little use for them, the field of invention

is likely to profit. It is to be remembered, however, that in this field machines have multiplied more rapidly in the last generation than in all the rest of the history of mankind. Would the new industrial conditions alone account for this?

"14. We shall enjoy the extraordinary advantage of having lawyers, journalists, and politicians with more correct views of social and national conditions and problems.

"15. It will help to prevent the growth of a feeling of contempt for manual occupation and for those who live by manual labor.

"16. It will, to a certain extent, readjust social standards in the interests of true manliness and intrinsic worth."

K.—Numbers 14, 15, and 16 scarcely require comment. They express highly desirable results, in the attainment of which manual training probably has its share.

"17.—It will accelerate the progress of civilization by greatly diminishing the criminal and pauper classes, which are largely made up of those who are neither willing nor able to earn an honest living."

L.—There is considerable evidence to support Number 17. J. M. Gillette, in his "Vocational Education," cites facts given by Professor Richard T. Ely, Dr. R. P. Faulkner, Booker T. Washington, Frederick Wines, and others, which indicate that lack of ability and skill, which special training would give, largely accounts for the existence of adult criminals and paupers.[50] In the same chapter he gives figures which show that over 80% of the paroled convicts of Elmira, New York, where trades are taught and academic instruction is maintained, have been reformed.

"The corner stone of the reformative system is industrial training. * * * * To effect a rounded development, intellectual and moral education is an essential accompaniment of industrial training, and schools of trade must be supplemented by schools of letters."[51]

Although these statements bear more directly upon industrial education than manual training, it is but a step from one to the

[50] John M. Gillette, "Vocational Training," Chapter VII.

[51] Eugene Smith, "American Journal of Sociology," Vol. XI, pp. 94–95 (from Gillette, p. 159.)

other, so that they apply with almost as great force to manual training.

Dr. C. R. Henderson gives us further evidence. He states: "It is almost certain that the custom of confining growing boys to the mere conning of book lessons frequently irritates and maddens them, excites disgust for studies which seem to have no relation with their lives and give their muscles nothing to do. One thing shines out clearly from the records thus far studied; that the lack of instruction in manual and trade processes and of personal moral and spiritual influences, must be charged with much of the tendency to crime.[52]

"The manual training school is suitable for industrial and reform schools, and for intermediate prisons or reformatories for young men."[53] If it be suitable for reform schools, it should be equally suitable, as a preventive measure, for many boys who might be drifting toward such schools.

A large majority of criminals have no trade and are little better off from a scholastic standpoint. It has been found by experience that it is better to teach them a trade by means of which they can readily earn a living when discharged, rather than to attempt to teach them academic subjects, except in relation to the trade.

Such testimony on the value of manual training in respect to these points seems to be conclusive.

"18. It will show itself in a hundred ways in the future homes of our present pupils; on the one hand, in the convenience and economy of useful appliances; on the other, in the evidences of good taste in matters of grace and beauty."

M.—Number 18 is also a result which is certainly traceable to manual training. Any one who has "kept house" will testify to the numerous ways in which a knowledge of manual training may be applied. This would presuppose, however, practical instruction, not merely instruction in fancy work.

The argument Number 7, that has been very widely used in urging the instruction of manual training and domestic science has been that, because of the interest aroused, a greater number of boys and girls would be attracted to school. Closely allied

[52] R. C. Henderson, "Defectives, Dependents and Delinquents," p. 250.
[53] *Ibid.*, p. 286.

to it is the contention that the two courses would be instrumental in decreasing the number of boys and girls below grade. The two questions are of the greatest importance, because it is a well known fact that two of the weakest links in the educational system of this country are the relatively low percentage of children who remain in school till their eighteenth year and the large percentage of children below grade.

In order to get definite information on these points, I submitted a questionaire to eighty high schools (the schools were selected from the list published in the U. S. Commissioner's Report in 1910, Vol. II, p. 26), located in thirty-eight states, in which manual training and domestic science are taught. Those schools having the largest attendance were selected from each state in most instances. Replies were received from fifty-seven schools representing thirty-three states.

The questionaire reads as follows:

A.—Do you believe that Manual Training and Domestic Science have been instrumental in keeping a larger percentage of boys and girls in school? Have you any statistics, past or present, to support your position?

B.—Do you believe that Manual Training and Domestic Science have been instrumental in decreasing the number of girls and boys below grade? Have you any statistics, past or present, to support your position?

Question *B* was prompted for two reasons: (1). Because I have seen the statement as given in the questionaire more than once, and (2) because it is very frequently stated in another form, i. e., that manual training and domestic science not only arouse interest in these subjects, but they also stimulate the interest of the individual in other subjects, and, if this be the case, it is safe to assume that there should be fewer individuals below grade.

The replies are tabulated in the accompanying table.

The dashes (—) under the heading "statistics" indicate that, although no definite statistics were given, statements were made which are of more or less significance.

The crosses (x) indicate that the question was misinterpreted.

The abbreviation (Ind.) indicates that the answer given is either indefinite, non-committal or doubtful.

TABLE I.

Location	Students			Ques. A.	Stat.	Ques. B.	Stat.
	Boys	Girls	Total				
1. Birmingham, Ala.	39	.....	39	yes	no	no	no
2. Selma, Ala.	36	73	109	yes	no	Ind.	no
3. Berkeley, Cal.	60	.....	60	yes	no	yes	no
4. Ontario, Cal.	40	60	100	yes	no	yes	no
5. Redding, Cal.	27	30	57	yes	no	Ind.	no
6. Boulder, Col.	41	60	101	yes	no	yes	no
7. Hartford, Conn.	220	121	341	yes	no	yes	no
8. Macon, Georgia.	65	.....	65	yes	—	yes	no
9. Streator, Ill.	28	60	88	yes	no	yes	no
10. Fort Wayne, Ind.	249	224	473	no	yes	no	no
11. Indianola, Iowa.	50	75	125	no	no	no	no
12. Waterloo, Iowa.	40	50	90	no	no	no	no
13. Pittsburg, Kansas.	70	103	173	Ind.	no	x	x
14. Sterling, Kansas.	58	46	104	Ind.	no	x	x
15. Lexington, Kentucky.	50	50	100	no	no	no	no
16. Baltimore, Maryland. (Sup. Man. Training).	141	335	476	yes	—	Ind.	no
17. Pocomoke, Maryland.	42	57	99	yes	no	yes	no
18. Brockton, Mass.	174	.....	174	Ind.	no	no ans.	no ans.
19. Brookline, Mass.	82	22	104	yes	no	Ind.	no
20. Fitchburg, Mass.	85	.....	85	Ind.	no	no ans.	no ans.
21. Lynn, Mass.	212	.....	212	yes	yes	Ind.	no
22. Quincy, Mass.	135	81	216	yes	no	yes	no
23. Beverly, Mass.	....	.....	.....	yes	no	yes	no
24. Ironwood, Mich.	99	152	251	yes	yes	x	x
25. Sault Ste. Marie, Mich.	79	105	184	yes	no	yes	no
26. Stephen, Minn.	12	21	33	yes	no	Ind.	no
27. Yazoo City, Miss.	34	.....	34	yes	no	no	no
28. St. Louis, Mo. (McKinley School).	332	315	647	yes	no	no	no
29. St. Louis, Mo. (Central High)	151	174	325	no	yes	no	yes
30. Billings, Mont.	50	.....	50	yes	no	yes	no
31. Omaha, Neb.	312	.....	312	Ind.	no	Ind.	no
32. Berlin, N. H.	46	.....	46	yes	yes	no	no
33. Nashua, N. H.	54	49	103	Ind.	no	Ind.	no
34. Newark, N. J. (Barringer High School)	144	.....	144	Ind.	no	no	no
35. Paterson, N. J.	195	.....	195	yes	no	Ind.	no
36. Long Island City, N. Y. (Bryant High School)	155	195	350	yes	yes (Not submitted)	yes	yes
37. Fargo, N. D.	45	75	120	yes	no	no	no
38. Cleveland, Ohio. (Lincoln High School)	69	106	175	yes	no	no	no
39. Springfield, Ohio.	199	288	487	yes	no	yes	no
40. Oklahoma City, Okla.	70	6	76	yes	yes	no	no
41. Pittsburgh, Pa. (Allegheny H. S.)	120	53	173	yes	—	Ind.	no
42. Lebanon, Pa.	37	8	45	yes	yes	no	no
43. Reading, Pa.	394	.....	394	yes	—	no ans.	no ans.
44. Wilkes-Barre, Pa.	118	.....	118	Ind.	no	no ans.	no ans.
45. Bridgewater, S. D.[1]	12	13	25				
46. Memphis, Tenn.	159	3	162	yes	no	Ind.	no
47. Dallas, Texas.	49	111	160	no	—	Ind.	no
48. Salt Lake City, Utah.	85	90	175	yes	no	no	no
49. Richmond, Va. (Armstrong High, colored)	87	271	358	no	—	no	no
50. Olympia, Wash.	55	87	142	yes	no	yes	no
51. Seattle, Wash. (Broadway High School)	240	200	440	yes	no	yes	no
52. Snohomish, Wash.	86	95	181	yes	yes	no	no
53. Beloit, Wis.	94	100	194	yes	no	yes	no
54. Milwaukee, Wis. (East Division High)	44	....	44	yes	no	x	x
55. Oshkosh, Wis.	106	118	224	yes	yes	no ans.	no ans.
56. Superior, Wis.	60	40	100	yes	no	no	no
57. Menominie, Wis.				yes	yes	no ans.	no ans.

[1] Work not introduced as yet, consequently it is not included in the totals.

From Table I it is seen that 41 schools believe that manual training and domestic science have been instrumental in keeping a larger percentage of boys and girls in school, nine of which have statistics; seven do not believe so, two of which furnish statistics; and eight are indefinite in their replies. There are 39 which have no statistics; 11 have statistics; 1 was not submitted; and 6 make statements which are not classified under statistics. The statistics of those schools which believe that manual training and domestic science have been instrumental in keeping a large number of boys and girls in school are given below:

21. Lynn, Mass. "In 20 years the enrollment in the high school increased from 130 to 860."

24. Ironwood, Mich. "In 6 years the enrollment increased from 160 to 315."

32. Berlin, N. H. "Before these courses were introduced (1905) 60% of the boys and 20% of the girls never came to high school. Today 98% of those eligible to come do so, and in those particular courses probably 85% remain four years."

40. Oklahoma City, Okla. "Manual Training was introduced in September, 1904—enrollment in the high school 301; Domestic Science Department introduced in January, 1907—500; present enrollment, 1,550."

42. Lebanon, Pa. "In four years our high school enrollment has increased from 216 to 320. It is estimated that 10% of this increase is due to the addition of these departments in 1907."

52. Snohomish, Washington. "The Snohomish High School has increased from less than 100 to an enrollment of 282 in ten years. The growth of the town has been inconsiderable."

57. Menominie, Wis. "Up to eight years ago, the highest enrollment in the Menominie High School for any year was 165 students. At that time the manual training work was considerably extended both in the grades and the high school. For the past four years the enrollment has reached 250 yearly, an increase of about 65%. There has been no change in the industrial conditions and practically none in other conditions in the city during that time; the school census shows perhaps a

dozen less children of school age in the city than there were eight years ago. At the same time a county training school and a county school of agriculture have been opened in the city and both have been well attended and have probably taken some students that otherwise would have enrolled in the high school. The only reason I can give for the increased attendance or the fact that the eighty grade pupils stay and enter high school is the attraction of the manual training work given in the grades and the high school. I know from personal contact with patrons of the school that things that their children are now able to get in manual training in our city schools have kept many of them in school beyond the compulsory age of 14."

Statistics submitted by schools which do not believe that manual training and domestic science have been instrumental in keeping a larger percentage of boys and girls in school:

10. Fort Wayne, Ind., and Kansas City, Kan. "The validity of the first assumption, that manual training would attract to the high school many young people, especially boys, who would not otherwise enter, can only be determined by statistics which are not at hand except for Kansas City. There, in 1898, a well-equipped Manual Training High School was opened with an enrollment of 842 students, and yet the total enrollment for that year of all the other high schools of the city decreased only 142. One might jump to the conclusion that the establishment of the Manual Training High School attracted 700 students who would not otherwise have entered. But when it is observed that the total enrollment of all the non-manual training schools was, at the end of five years, more than 200 less than it was for the year preceding the opening of the manual training high school, instead of being 1,242 greater as it would have been had the average annual increase of the non-manual training high schools for the preceding five years been maintained, it becomes evident that the total increase in the high school enrollment of the city, due to the attractive power of the manual training high school, did not exceed 230 at the end of the five years. The only conclusion justified by the figures is that the manual training high school is more popular than

the others and has probably increased the total attendance a little above what it would otherwise have been. That some 550 students entered the high schools during the opening of the manual training high school who would not otherwise have done so is obvious. The question is, what became of them? The answer may perhaps be found in the following facts. In 1903, 26% of the boys enrolled in the manual training high school dropped out before the end of the year and 19.5% of the girls. The corresponding figures for the largest non-manual training high school were 18.2% and 19.2%. In 1905 the number of graduates from the latter school, with a total enrollment of 1,453, was 206, and from the former, with an enrollment of 1,683, was 135. The percentage of the enrollment graduated in the non-manual training school was 14.2%, in the manual training school it was 8%. The percentage of male graduates upon male enrollment was 11.09 in the former and 7.16 in the latter. As far as the figures for a single year in a single school justify a conclusion, it must be that the pupils in the manual training school do not "stick" as well as those in the non-manual training schools. That this fact is observable throughout the five preceding years, Superintendent Greenwood distinctly states. A general investigation with a view to ascertaining what the facts of experience show, in regard to the validity of the assumption above stated, would be worth while.[54]

"Our own experience has been too short to settle anything, but the following table and statements may help towards a conclusion. Table II refers to the high school. Table III shows promotions from 8-A grade. The negative sign (—) indicates decrease."[55]

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[54] C. T. Lane, Principal of High and Manual Training School, Fort Wayne, Indiana, "Report of Public Schools," 1907, Fort Wayne, Indiana, p. 56.
[55] *Ibid.*

TABLE II.

Year	Boys	Girls	Total	Per cent. Boys	Per cent. Girls	Inc. Boys	Inc. Girls	Total Inc.
1898.....	146	267	413	35.4	64.6	15	34	49
1899.....	151	246	397	38.0	62.0	5	—21	—16
1900.....	156	217	373	41.8	58.2	5	—29	—24
1901.....	144	244	388	37.1	62.9	—12	27	15
1902.....	173	247	420	41.2	58.8	29	3	32
1903.....	181	248	429	42.2	57.8	8	1	9
1904.....	206	274	480	42.9	57.1	25	26	51
1905.....	236	356	593	40.0	60.0	30	82	112
1906.....	275	273	648	42.4	57.6	39	17	56
1907.....	271	405	676	40.1	59.9	—4	32	28

TABLE III.

Year	Boys	Girls	Total	Per cent. Boys	Per cent. Girls	Inc. Boys	Inc. Girls	Total Inc.
1898.....	51	65	116	44.0	56.0			
1899.....	62	88	150	41.3	58.7	11	34	45
1900.....	41	84	125	32.8	67.2	—21	—4	—25
1901.....	46	78	124	37.1	62.9	5	—6	—1
1902.....	67	103	170	39.4	60.6	21	25	46
1903.....	81	107	188	43.1	56.9	14	4	18
1904.....	95	129	224	42.4	57.6	14	22	36
1905.....	95	139	234	40.6	59.4	0	10	10
1906.....	100	136	236	42.4	57.6	5	—3	2
1907.....	105	122	227	46.2	53.8	5	—14	—9

"We entered our new building and introduced manual training in the fall of the school year ending June, 1905. The increase in the enrollment of that year over the preceding year was 112, by far the largest increase in the history of the school. Part of this increase would have followed the opening of a handsome and commodious new building, regardless of what was taught in it. It seems fair, however, to assume that a part of this unusual increase of that year was due to interest and curiosity concerning manual training work. It must be observed, however, that the increase in the boys was only 30, 5 more than the preceding year, while the increase in the girls was 82, 56 more than in the preceding year. Comparing the period of

three years preceding the introduction of manual training with the three years since, we get the following results. For the period preceding, the total increase was 92, for the period following, the total increase was 196. The increase in boys was 62 for the first period and 65 for the second, practically no difference. The increase in girls was 30 for the first period and 131 for the second, a difference of 101. Another fact must be considered. A reference to Table III shows a very remarkable increase in the number of promotions from the 8-A Grade during the period 1901–7, an increase of 103. This rapid growth of promotions from the 8-A Grade would, of course, in the absence of any other influence, have largely increased the enrollment of the high school. The conclusion from all these facts is that the influence of the new work was felt more strongly by girls than by boys, that the amount of influence is difficult to determine, but was certainly not great.

"As to whether or not manual training tends to keep boys in school and to inspire a keener interest in other subjects, our experience, as far as it has gone, supports the negative."[56]

29. St. Louis, Mo. (Central High). "I do not believe that manual training and domestic science have been instrumental in keeping a larger percentage of boys and girls in school. I have statistics to support my position. In this school we give eleven courses. My tabulations last September of the percentage of loss in each course show that of all pupils registered between February, 1911, and June, 1911, there failed to report in September for their courses:

Art Course	20.5%	Four Year Commercial Course	42.15%
General Course	25.5	Manual Training Course	24.2
Scientific Course	9.3	Domestic Science Course	29.5
College Scientific Course	15.4	Prep. to Teachers' Col. Course	8.4
Classical Course	20.0		
College Classical Course	11.8		
Two Year Commercial Course	41.5		

[56] C. T. Lane, Principal High and Manual Training School, Fort Wayne, Indiana, "Report of Public Schools," 1907, Fort Wayne, Indiana, p. 57.

"These figures include losses of pupils through the entire range of the eight semesters of the courses.

"You will notice that the courses that prepare for business, the four year and the two year commercial, suffer the greatest losses. Those in which pupils have a more distant objective, such as becoming teachers, and following professions, as in the scientific and college scientific courses, remain in school, and the percentage of loss in these is relatively smaller. The manual training and domestic science pupils represent the average loss.

"It is my opinion that the manual training and domestic science courses have brought a much larger number of pupils into the school, about one third of whom drop out during the first year. In fact, from February to September, 1911, 60.4% of my entire school belonged to the first two semesters or first year. It may be interesting for you to know that between February, 1911, and September, 1911, 37.8% of the manual training boys dropped out of school and in the second semester, 12.8%. Of the domestic science pupils, 45.8% dropped out during the first term and 26.7% during the second.

"Moreover, in January, 1908, 411 pupils entered this school, of whom thirty-four began manual training and thirty-six domestic science. We are now graduating seven boys and two girls from these two courses."

Statements made which are not of sufficient significance to be very well classified under statistics:

8. Macon, Ga. "The upper classes have increased in size faster than first year classes, about 10%."

16. Baltimore, Md. "According to reports of principals supervising schools before and after manual training was introduced, such training has a marked effect upon increasing the attendance."

41. Pittsburgh, Pa., Allegheny High School.—"Before we introduced this new department of our high school course, our enrollment was about 600; now it is 800 and about 200 students are in the manual training and domestic science work."

43. Reading, Pa. "Since the introduction of manual training in our school the enrollment has steadily gone up, until today the enrollment of the boys outnumbers the girls."

47. Dallas, Texas. "Our graduating classes for the past ten or twelve years hold a fairly constant relation in numbers to the total enrollment."

49. Richmond, Va., Armstrong High School (colored). "We introduced manual training in this school in 1905, giving each boy and girl a half day each week in Domestic Science (girls) and Woodwork (boys). The school fell off in number that year and has never been as large since.

"However, the next year, 1906, I changed the arrangement of studies and made a four year course instead of a three year course. This may have something to do with the decrease in the attendance.

"Last September I introduced the industrial feature of the Manual Arts. We require all pupils who fail in the first year in the academic department to enter the industrial work. This is at present planned to give work in cooking and sewing, leading to proficiency in these arts. It is also proposed to give the boys an opportunity to learn some trade under shop conditions (part time plan). Our plan is to give a half day in academic and manual work daily.

"This year the school has fallen off very considerably in number again, the total roll being 60 less than last session. But again the falling off may be partly due to the opening of a school within two blocks of the building, charging a nominal tuition.

"I should, therefore, say that manual training has had no appreciable effect in either of the two phases mentioned."

The replies of those schools designated as indefinite or noncommittal are given below:

13. Pittsburg, Kansas. "Very little and that due to the elasticity of the course of study."

14. Sterling, Kansas. "The work is practically new here; the boys and girls take a good interest in the work."

18. Brockton, Mass. "I do not think that it would have a tremendous influence, although some may have been kept in school on account of such courses."

20. Fitchburg, Mass. "It has made very little difference here."

31. Omaha, Neb. "We have apparently only the natural increase each year."

33. Nashua, N. H. "The work has been in operation only a short time, so no opinion can be given."

34. Newark, N. J. "Evidence not strong."

44. Wilkes-Barre, Pa. "Records rather support the question."

With these reports the increase throughout the United States in the enrollment of persons 5 to 18 years of age during recent years should be considered. According to the United States Commissioner's Report of 1910, there are nearly 1,400 cities in the United States having 4,000 population or over. In more than half of these cities the public schools have manual training in several years of the course, generally in the elementary grades, but frequently in all the years from the kindergarten through the high school.[57] In addition to these there are also 265 manual and industrial schools, exclusive of the Indian Schools, of which 74 are public.[58]

TABLE IV.

(1)—Cities of over 4,000 inhabitants offering Manual Training.

1869–'70	'79–'80	'90	'94	'96	'98	1900	'01	'02	'03	'04	'05	'06	'07	'08	'09
		37	95	121	146	169	232	270	322	411	420	510	644	671	over 700

(2)—Percentage of persons 5 to 18 years of age enrolled in public schools.

57	65.5	68.61	...	.....	....	72.43	c 71.67	...	...	.....	c 70.35	c 70.43	c 69.61	c 69.32	c 71.3

The first table was taken from the U. S. Commissioner's Report 1909, Vol. II, p. 1161 and Report of 1911.

The second table was taken from the U. S. Commissioner's Report 1910, Introductory Survey, p. xiv and Report of 1911.

[57] United States Commissioner's Report 1910, Vol. II, Chapter 26, p. 1205.

[58] United States Commissioner's Report 1910, Vol. II, Table 168.

The sign (c) over numerals in Table 2 indicates that they are based on a comparison between actual numbers of pupils 5 to 18 years of age enrolled (duplicates excluded) and estimated number of persons 5 to 18 years of age.

Notwithstanding the great increase in the number of schools which teach manual training and notwithstanding the general impression among school principals that manual training and domestic science have been instrumental in keeping a larger percentage of boys and girls in school, it is observed that in 1890, when there were but 37 schools recorded as teaching manual training, the per cent. of persons enrolled from 5 to 18 years of age was 68.61, and that in 1907, when there were 644 schools recorded as teaching manual training, the percentage of persons enrolled from 5 to 18 years of age was 69.61; an increase of 1 per cent. Again, comparing the years 1900, when there were 169 schools recorded as teaching manual training, and 1908, when there were 671 such schools, there was an actual decrease of 3.11 per cent. of persons 5 to 18 years of age enrolled.

Of course, as a check upon these figures, it is to be remembered that the percentage of persons 5 to 18 years of age enrolled is estimated in several instances, so that they may not be accurate, but we have no more reliable statistics upon which to depend.

Before formulating any conclusion, I wish to call particular attention to the large number of instances where a general impression is given, one way or the other, without any statistics to support the impression.

And even when statistics are given, with the exception of three or four cities, no reference is made as to whether the change in enrollment is due to a change in local conditions, or whether the change is simply a normal one, or whether it may be due to some other influence. It is my belief that, when a change is made in the curriculum of a school of such vast importance as is the introduction of manual training, and even when changes of less importance are made, statistics should be kept in order to determine whether or not the change affects the enrollment. If this were done we could have more facts and less impressions upon which to depend.

It is obvious from the facts related that, although in certain communities manual training and domestic science have been instrumental in keeping a larger percentage of boys and girls in school, throughout the country their introduction has made practically no difference in the per cent. of enrollment.

According to Table I there are sixteen schools in which it is believed that Manual Training and Domestic Science have been instrumental in decreasing the number of boys and girls below grade, one of which has statistics which were not submitted; eighteen did not believe so, one of which furnished statistics; twelve were indefinite in their replies; four misinterpreted the question; and six did not answer. There were forty-four which have no statistics; two have statistics, one of which was not submitted; four misinterpreted the question; and six did not reply.

Only one school submitted statistics on this question and they referred to one year's work.

29. St. Louis, Mo., Central High School. "I do not believe that the Manual and Domestic Science courses have decreased the number of girls and boys below grade. I have statistics to support my position.

"From February, 1911, to June, 1911, I had twelve hundred and eight pupils, of which six hundred and twelve failed in one or more studies, practically fifty per cent. of the school. The lowest percentage of failure was in the teachers' preparatory course in which thirty-six per cent. of the pupils failed in one or more studies. The Manual Training Course represented fifty-four per cent. and the Domestic Science also fifty-four per cent., who failed in one or more studies. This undoubtedly will seem to you an exceptionally large percentage of failures. I may, therefore, indicate the percentage by semesters:

Manual Training Course		Domestic Science Course	
First Semester	70%	First "	52%
Second "	70%	Second "	53%
Third "	35%	Third "	40%
Fourth "	32%	Fourth "	55%
Fifth "	46%	Fifth "	14%
Sixth "	55%	Sixth "	50%
Seventh "	33%	Seventh "	25%
Eighth "	0%	Eighth "	0%

The principal of another school, whose reply is classified under the column (no) gives a very interesting reason for his position as follows: 56. Superior, Wis. "I believe they have increased the number below grade because they have kept in school a large number that would have dropped out. The ones that dropped out do so in many cases because they find school work hard and not to their liking. However, I believe the courses a good thing, for any boy or girl that is kept in those courses is getting something even though he may not pass in his other work. I am heartily in favor with the move to make school work a preparation in every way for their future places in life."

Most of the schools classified as indefinite or non-committal expressed themselves as doubtful or made statements to that effect. The replies of a few which are of more significance are given below.

2. Selma, Ala. "It is the Superintendent's opinion that there are a number of vastly more important influences than the subjects of study that affect and determine the classification and promotion of pupils."

16. Baltimore, Md. "Increased attendance will in time be a means of decreasing repeaters. We have only our regular attendance reports to support this contention."

41. Pittsburgh, Pa., Allegheny High School. "Not a few students who formerly took the academic course and failed because they had no abiding interest in the course now take the Manual Training or the Domestic Science and make good records."

A study has recently been made of 318 cities of varying size from all sections of the United States with reference to retardation. The conclusions which are given are based on an age grade census. Normal age is defined as 6 to 8 for the first grade, 7 to 9 for the second, 8 to 10 for the third, etc. From the statistics given, I have calculated that the per cent. of the total number of boys below grade is 37.26—of girls 31.86—and of the total number of pupils 34.56. The fact that there are 21 cities which show less than 15 per cent. of retardation for boys and seventeen cities that show more than 60 per cent. of

boys over age, will give some idea of the great variation encountered.[59]

A short time ago Superintendent Lurton, of Anoka, Minn., investigated the grade age status of 17,279 children in the grade below the high school in 55 villages and smaller cities in Minnesota. The towns are widely scattered in the State so as to afford every variety of social and industrial conditions. Instead of using the normal age of 6 to 8 for the first grade, 7 to 9 in the second, as in the investigation mentioned above, he uses the normal age of 6 to 7 for the first grade, 7 to 8 for the second grade, etc., for reasons that seem sufficient. He finds that the average of all pupils considered, that are below grade, is 58.9. Taking the normal grade of 6 to 8 for the first grade and so on, he finds the percentage of children below grade to be 30.9.[60]

The results of these investigations have been given, not so much on account of the bearing that Manual Training and Domestic Science have upon them, but rather to show the seriousness of the problem under discussion. No attempt is made to give reasons for the results obtained, though several might readily be suggested, as absences, change of residence, poor nourishment, physical defects, etc.

If records of retardation were kept before and after the introduction of Manual Training and Domestic Science, it seems to me the statistics would give definite information, for the other conditions would remain more or less constant. Of course other conditions which might influence the records would have to be carefully noted. The introduction of medical inspection, change of teachers, an epidemic of sickness, etc., might influence the percentage of those retarded one way or the other. But definite information must be obtained upon which to base conclusions, so that it is of the utmost importance that results, possible from a change in the curriculum, should be most carefully considered.

[59] United States Commissioner's Report, 1910, Vol. II, Introd. Survey pp. XXI–XXII.

[60] F. E. Lurton, "Retardation in 55 Western Towns." Journal of Education, March 7, 1912, p. 262.

Because of the lack of statistics it is almost impossible to form any definite conclusions on this point. But from the large percentage of children below grade, which continues to exist even though various methods have been employed to increase the interest of the pupils, it seems fair to assume that Manual Training and Domestic Science have not stimulated the interest of the pupils sufficiently to keep them from being retarded.

Results Considered from the Standpoint of Psychology

Mr. Robert K. Row in the "Educational Meaning of Manual Arts and Industries" considers the manual arts from a psychological viewpoint. Some of his conclusions are as follows:

Impulses.—"Such fundamental impulses, as the general impulses to activity, the impulse to get sense stimulations, the impulse to play, to imitate, to construct or to make things, to experiment, to see what things will do in different conditions, the social impulse, the aesthetic, the ownership impulse, find peculiarly favorable and appropriate opportunities for expression in the various forms of Manual Arts and Industries that may be introduced into the school."[61]

Therefore "the nature of the young child demands for his best all round development regular, systematic, varied experiences in manual arts and industries."[62]

Sense Training.—"The actual manipulation of various materials, clay, sand, paper, cardboards, woods, metals, cottons, wools, silks, materials that are being worked over for the sake of some end in which the tactile qualities must be appreciated, supplies all the conditions for desirable training of the sense of touch. Along with these will go training in visual perception, which, however, will have special emphasis in those occupations involving colors, light and shade, details of form and proportion. Another accompaniment will be the training of the muscular sense in judging weight, pressure, and other forms of force."[63]

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[61] Robert K. Row, "The Educational Meaning of Manual Arts and Industries," p. 206.

[62] *Ibid.*, p. 207.

[63] *Ibid.*, p. 69.

Motor Control.—"Experiments were conducted in which a saw handle involving the principle of the hand dynamometer was used; also with a penholder which involved the same principle. From these experiments it is concluded that 'the simplest manual occupations, exercised with a fair degree of regularity and frequency under the influence of interest and attention, tends to develop, more or less rapidly, voluntary motor control for the particular movements involved."[64]

Mr. Row's conclusions seem to be quite logical. It is a certainty that the child is full of various impulses. When he has difficulty in handling the abstract, manual training enters upon its proper sphere in leading his impulses in the proper direction. It is equally apparent that the child's sense of touch, his visual perception, etc., are developed by his manual activities. Of course his sense centers would be stimulated and developed even though he never had manual training, but when these centers are stimulated under competent instruction, they would assuredly be trained to a greater degree of accuracy. Furthermore, the habits of motor control formed are of permanent value. When one acquires a muscular habit, through education of the reflex centers, it stays there. This is a fact admitted by practically all psychologists.

But "with the progress of the child through the schools, manual training as a form of motor activity should occupy a less and less important place, except for those pupils whose wills in maturity are to be manifested primarily in energizing and co-ordinating muscular action. A boy who is to be a carpenter should contrive in all stages of his educational course to make manual training of this sort his most important occupation. But a boy who is to deal with questions of jurisprudence or medicine or education will suffer arrest in his evolution if he be kept too long and continuously at work with his hands. His will must come to habitually express itself with ease and efficiency in a different way from that of the carpenter. * * * * This does not mean, however, that manual training should ever be entirely abandoned; it means

[64] Robert K. Row, "The Educational Meaning of Manual Arts and Industries," p. 116.

simply that in the higher departments of education it is to receive less and less emphasis except for those whose life work involves continued use of the hand rather than of head primarily."[65]

Conclusions

Of the eighteen benefits which Dr. Woodward expected to result from the introduction of manual training, numbers 1, 2, and 3 would probably be true, provided mathematics, science, drawing, language work, and manual training were properly correlated, but this is, unfortunately, not always the case, even after twenty-five years' experience. Numbers 4, 5, 6, and 7 give negative results. No direct evidence can be obtained to support numbers 9, 11, 12, 13, 14, 15, and 16; consequently, they must be considered as highly desirable results, which cannot be accepted with certainty. Numbers 8, 10, 17, and 18 may with reasonable assurance be considered as benefits directly derived from manual training.

Manual Training and Domestic Science have not, to any appreciable extent, been instrumental in increasing the percentage of persons 5 to 18 years of age enrolled in the public schools throughout the country.

On account of a lack of statistics it is impossible to form any conclusion as to whether or not the introduction of these two courses has been a factor in decreasing the number of boys and girls below grade. Sufficient evidence has been obtained, however, to warrant the statement that they have not been instrumental in stimulating the interest in other subjects sufficiently to keep the pupil from being retarded, except in individual cases.

The elementary but systematic training which a boy receives by completing a thorough course in manual training will certainly be of as great value to him in his trade, should he select a trade, as is the academic work to one who later enters one of the professions.

Manual training is also a means of relaxation from the work which requires greater mental effort.

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[65] M. V. O'Shea, "Dynamic Factors in Education," p. 79.

There seem to be as good reasons for stating that it helps develop some of the formal powers, such as attention, perseverance, and industry, as there are for stating that certain of the academic subjects develop these powers.

Manual training leads the child's impulses in the proper direction, develops certain of the sense centers, and forms habits of motor control which are of permanent value.

Perhaps one of the greatest results of the introduction of manual training is the fact that it was the entering wedge by means of which the vocational, industrial, and continuation schools have been and will continue to be introduced.

Finally, I believe the results are of sufficient importance to warrant the maintenance of manual training in the public school system throughout its entire course but that they are not of as far reaching effect as the prediction of those who were largely responsible for the introduction of manual training would lead us to expect.

CHAPTER IV

Present Day Tendencies

During the last few years there has been an unsettled condition in educational circles. Criticism against the various school systems has been plentiful and bitter. No doubt some of it is deserved, but much of it is exaggerated. It was thought by many that the introduction of manual training and domestic science would prove to be the solution of many educational problems, but such hopes have not been fully realized. "The wide indifference to manual training as a school subject may be due to the narrow view which has prevailed among its chief advocates. It has been urged as a cultural subject, mainly useful as a stimulus to other forms of intellectual effort—a sort of mustard relish, an appetizer—to be conducted without reference to any industrial end. It has been severed from real life as completely as have other school activities. Thus it has come about that the overmastering influences of school traditions have brought into subjection both the drawing and the manual work."[66]

The feeling that the best results were not being obtained from present day educational methods has led to various experiments —the introduction of which was made possible through the acceptance of manual training. These experiments have been prompted by the experiences of foreign countries, by the practices of many corporations in this country, and by the needs of the community.

For several years, quite a number of corporations in the United States have maintained apprenticeship schools in order to prepare boys and young men in their employ to become skilled workmen. The public schools did not provide for them and the old apprenticeship system, as applied to present day methods,

[66]Report of Mass. Industrial Education Commission, p. 14.

was worse than useless. Mr. Magnus W. Alexander of the General Electric Company of Massachusetts, states that "the leaders of the modern apprentice idea are sensing their new responsibilities by instituting courses which aim to train young men for industrial efficiency, as well as social usefulness. Industrial efficiency is sought by a systematic and thorough training in the practical work of a chosen trade, and social usefulness is striven for, through effective, co-ordinate instruction in the theoretical elements on which the practical work is based, in such a manner that the growing young man may perform his work with increasing understanding and intelligence and may receive a wider outlook and imagination, and a better appreciation of his obligations as well as his rights in the team-work of life."[67]

Furthermore, a certain portion of the corporations seem to be looking forward to the time when the public schools will co-operate with them in giving the young people who desire it a practical education, which shall not be destitute of culture. Mr. G. M. Basford, assistant to the President of the American Locomotive Company, bears witness to this statement when he says: "We need skilled workmen who understand their work and its relations to the work of others, and who are prepared in citizenship to take their places in the organization of human life. To supply the need we must train the hands and the minds of our recruits. The present emergency seems to compel us to take the school to the boy for the training of the mind. Our greatest work is in the shop. The boy is in the shop and we must move the school to him for we cannot move him to the school. We cannot wait for the educators to adapt themselves to our problems, but we must take it in hand ourselves—hence the corporation school. Whether or not the corporation school is permanent is a question which may be safely left to the future. At present it meets an urgent need and will meet it until co-operation with the public schools may be effected."[68]

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[67] National Society for the Promotion of Industrial Education, Bulletin, No. 13, p. 55.

[68] *Ibid.*, p. 89.

Organized labor has placed itself on record as being in favor of some form of industrial training for those who desire it. It is not prepared to accept the plan of co-operation between corporations and public schools, however, because of the fear that the corporations would dictate the policy of the public schools and exploit the young people working in the shops. But if the experiments which are now being performed are successful and prove to be beneficial to the young people, it is to be hoped that the labor unions will be broad minded enough to aid the movement. The belief, if ever there were such a belief, that manual training would be instrumental in increasing the number of skilled laborers appreciably, has been dispelled. This has been felt particularly by the trade unions. "The trade unions have been waiting in vain for twenty-five years for the manual training schools to furnish recruits to the depleted ranks of skilled labor. It is time now to take steps to bring back the standard of efficiency. We want a system which will develop the labor power of our people so that every worker may become interested in his work and approach the limits of human efficiency. * * * * A healthy community is impossible without the union of the schoolhouse, the home, and the workshop. Modern life has not yet accommodated itself to the great revolution of our industrial system. Nothing but a thorough industrial education and understanding of the economic interests of society can lead to the necessary union between labor and capital and give peace and prosperity to the present disturbed and suffering industrial world."[89]

It is quite probable that the attitude of organized labor will have some bearing on the future policy of the public school system. There seems to be a feeling in labor circles that the industrial training should be acquired at public expense. The proposition is good but it is doubtful whether it is feasible. The expense that would be involved would be enormous. It would be impossible for any community to maintain the machinery

[89] Charles H. Winslow, Representative of American Federation of Labor, in "National Society for the Promotion of Industrial Education, Bulletin No. 13," pp. 171–172.

and improvements that the various manufacturers in the community would be compelled to have. The co-operation plan, under proper supervision and control, would undoubtedly fulfill the conditions with much less expense and probably with better results.

Some time ago, Dr. Georg Kerschensteiner, Superintendent of Schools, Munich, Bavaria, gave several lectures in this country in which he described the operation of the continuation schools in Munich and other parts of Germany. His lectures created a widespread interest and met with much favorable comment. The continuation schools have been very successful in Munich. Dr. Kerschensteiner makes the statement that there are about 20,000 pupils under 18 years of age in these continuation schools and that 93% of all the boys and girls between 6 and 18 in Munich attend the public schools of the town. It is doubtful whether this percentage can be equalled by any community in the United States. It has been our complaint for years that the present system of education does not keep the boys and girls in school. The Munich plan would seem to suggest a remedy for our defect, provided, of course, it would meet our conditions satisfactorily. This can be proved only by experiment, and the experiments could not be successful without the hearty co-operation of manufacturers. In Germany, the employer is required to make a sacrifice by giving his apprentices the requisite time for school during the hours of work. According to paragraph 120 in the trade regulation law of the German Empire, issued in 1897, "every employer is put under obligation to dismiss his apprentices from work at the hours appointed by the town for school purposes, under penalty of a fine."[70]

Certain of the fundamental principles underlying the proper organization of continuation schools, as outlined by Dr. Kerschensteiner, may be briefly stated. "The first fundamental principle of a rightly organized continuation school is that it must extend to the eighteenth year of every boy or girl who is not being educated in a higher school. It is of no advantage to a constitu-

[70] Dr. Georg Kerschensteiner, "Vocational Training," p. 12.

tional state to make its opportunities of culture accessible only to a small percentage.[71]

"In Germany everybody is now convinced that the voluntary continuation schools no longer suffice for the educational needs of modern states. As long as the continuation school remains optional, thousands of employers will prevent their youthful workmen from making use of its opportunities, except at the end of their days' work, when the mind and body are fatigued.[72]

"In the second place the continuation schools must engage the interest of the pupil. This can only be done by interweaving its teaching with the trade of the pupil.

"The school must possess workshops and laboratories for practical work, as the center of its entire organization. There it can ennoble and intensify the work of boys and girls, and put processes that too frequently approach them only in a purely mechanical aspect on the basis of practical and scientific reflection.[73]

"The fourth essential of the continuation school is the attitude of regarding technical education largely as a means for mental and moral training.

"In the next place the subjects taught must be properly correlated. The relation between the theoretical and the practical must be made clear.

"Finally, the aim and end of all this training cannot be merely industrial education. Its aim and end is the education of the man, whom it will not permit to be identified with and lost in the workman, and the modern state can never hope to become a state of culture and justice till it has succeeded, by the right manner of instruction, in restoring to work, robbed of its divinity by the advance of industry, its educational powers."[74]

It is because of these factors, then—the maintenance of apprenticeship schools by corporations, the demands of organized labor, the fact that manual training has not produced skilled

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[71] Dr. Georg Kerschensteiner, "Vocational Training," p. 17.
[72] *Ibid.*, p. 18.
[73] *Ibid.*, p. 19.
[74] *Ibid.*, p. 16.

workers in any appreciable numbers, the influence of foreign experience, and the needs of the community, that experiments are now being tried by the public school system in a number of communities.

Several cities in the United States have put into effect the half-time scheme of education. Among those cities which have operated the system successfully may be mentioned Fitchburg, Mass., Cincinnati, O., Columbus, O., and Beverly, Mass. The general plan of operation is about the same in all of the above named cities, but it differs in some of the details. All seem to unite in giving credit to Professor Herman Schneider of the University of Cincinnati for first working out the plan in the United States.

According to the Fitchburg plan of Co-operative Education, "the course outlined is of four years' duration, the same as the regular high school course. The first year is spent wholly in school and the next three alternate weekly between shop and school.

"The manufacturers take the boys in pairs so that by alternating they have one of the pair always at work, and likewise the school is provided with one of the pair.

"Each Saturday morning the boy who has been at school that week goes to the shop in order to get hold of the job his mate is working on and be ready to take it up Monday morning when the shop boy goes into school for a week.

"Shop work consists of instruction in all the operations necessary to the particular trade.

"Boys receive pay for the weeks they are at work at these rates; for the first year, 10 cents an hour; the second year, 11 cents an hour; and the third year, 12½ cents an hour. * * * * These rates are higher than the former apprentices have been receiving, the manufacturers having of their own accord raised the prices.[75]

"Every candidate is given a trial period of two months, beginning immediately at the close of school in June, and if he likes the work and shows aptitude for the trade he takes the course,

[75] Report of W. B. Hunter, Fitchburg, Mass., National Society for the Promotion of Industrial Education, Bulletin No. 13, pp. 96–97.

otherwise he drops out, and, if he chooses, takes up some other course in the high school. Thus we give the boy an opportunity to find himself, something that has hitherto been lacking in our schools."

The course of study at Fitchburg differs materially from the regular high school course usually offered. It may be summarized as follows:[76]

Subjects	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.
English and Current Events	5			
English		5	5	5
Arith., Tables and Simple Shop Problems.	5			
Algebra	5			
Shop Math., Algebra and Geometry		5		
Shop Mathematics			5	4
Freehand and Mech. Drawing (First year, bench work)	8	6	6	5
Physics		4	4	4
Civics		2		
Mechanism of Machines		5	5	4
Chemistry			4	6
First Aid to the Injured			1	
Commercial Geography and Business Methods				2

The absence of language is quite noticeable. The time usually devoted to French, German, or Latin is taken up with Mechanism of Machines and Freehand and Mechanical Drawing, yet the number and scope of subjects offered would certainly give the pupil a broad enough outlook upon life so that he would not develop into a mere machine, with no interests other than those centered in his actual labor. And if, after a boy had taken and completed this course, he should desire to go to a technical college, he could readily do so with but a little additional preparation.

"The Co-operative Course then, by the verdict of the students, manufacturers, school authorities, and community has proved an unqualified success, and by extending its scope, there is no question in my mind but that the plan is the correct one to pro-

[76] National Society for the Promotion of Industrial Education, Bulletin No. 13, p. 99.

duce just the kind of workmen that the country demands, and give to the workmen the ladder to climb to the highest level that his native talents and ability will allow."[77]

According to the Fitchburg plan, a boy is given a two months' trial and if, at the end of that period, he desires to follow that particular trade, the parents of the boy and the manufacturer enter into a mutual agreement whereby the boy is to continue at his trade for three years and in turn is to be taught the various branches of the trade designated. This phase of the plan has been severely attacked by the labor organizations. They contend that the boy is really indentured to the manufacturer in such cases and that he is exploited for the profit of the manufacturer. Whether this is actually the case or not is a question, but it at least leaves room for suspicion. The Beverly Industrial School has endeavored to overcome this difficulty by having the trustees of the school retain full control of the pupils while in the factory and the same person to instruct a particular division in both factory and school. "By this means the work is conducted in a way to contribute most effectually to the boy's progress in his trade and not to suit the exigencies of the factory, and the instruction is imparted by a trained teacher and not left to the uncertain pedagogical ability of the ordinary foreman. Most important of all, it safeguards the pupils from exploitation and the manufacturers from unjust suspicion."[78]

The wide-spread interest in courses, other than the traditional cultural courses, has been instrumental in having legislation enacted in a number of states. Messrs. Edward C. Elliot and C. A. Prosser have presented the legislation, relative to industrial education in the public elementary and secondary schools, in Bulletin No. 12, of the National Society for the Promotion of Industrial Education. The statistics given cover only "practical training" as contrasted with the so-called "cultural training" provided by legislation for institutions of secondary grade, sup-

[77] W. B. Hunter, Director Industrial Department, Fitchburg High School, in National Society for the Promotion of Industrial Education, Bulletin No. 13, p. 108.

[78] Adelbert L. Safford, Supt. of Schools, Chelsea, Mass., in National Society for the Promotion of Industrial Education, Bulletin No. 13, p. 111.

ported and controlled by the public, wherein tuition is free and open to all able to meet the entrance requirements. Schools of the secondary grade only are considered. All private schools, schools for special classes, institutions for the supplementary education of those above high school age, and special departments in high schools or special schools offering vocational training along other than industrial or trade lines are eliminated.

The term "practical activities" as used in the table given below is intended to include or cover any and all of the following types of training: manual training, manual arts, mechanical arts, technical training, household economy, agricultural, and industrial and trade training.

THE EXTENT OF STATE LEGISLATION FOR PRACTICAL TRAINING

	Legislation	%	State aid	%
1. Number of states not legislating with respect to some type or types of practical activities	19	40		
2. Number of states legislating with respect to practical activities	29	60		
3. Number of states providing state aid for some type or types of practical activities.			16	33
1. Number of states providing for technical high schools	10	20	1	2
2. Number of states providing for manual training	18	37	9	19
3. Number providing for training in domestic economy	11	23	11	23
4. Number providing for agricultural training	19	39	13	27
5. Number providing for industrial and trade training	11	23	8	17
6. Number providing for all practical activities	3	6	2	4

Almost all of this legislation has been enacted during the past twelve years. Of the twenty-nine states legislating with respect to practical activities of any type, twenty-five have enacted their present provisions since 1900. Of the sixteen states granting state aid for practical activities of some type, fourteen have so provided since 1903.[79]

[79] National Society for Promotion of Industrial Education, Bulletin No. 12, Nov., 1910, pp. 23–26.

During 1911, Colorado was the only new state to enact legislation for practical activities. The legislation provided for the establishment of a school of agriculture and mechanic arts and appropriated $75,000 therefor, and also provided for the establishment of a state trade school. Alabama, Indiana, Maine, Massachusetts, Michigan, Minnesota, Pennsylvania, and Wisconsin have enacted legislation relative to industrial education, in addition to that which had previously been enacted.[80]

The keen interest manifested and the recent legislation enacted have created a widespread discussion on the possibilities of the practical activities or vocational training. One outcome of this ever growing movement has been the introduction of a bill by United States Senator Carrol S. Page in the Senate; this bill provides:

1. "For the maintenance of instruction in the trades and industries, home economics, and agriculture in public schools of secondary grade."

2. "For the maintenance of instruction in agriculture and home economics in State district agricultural schools of secondary grade, as provided in section two of this act."

3. "For the maintenance of branch field test and breeding stations—to be located at the agricultural high schools provided for in this act."

4. "For the maintenance in each State of a college of agriculture and the mechanic arts—of an extension department devoted to giving instruction and demonstration in agriculture, the trades and industries, home economics, and rural affairs, to persons not resident at these colleges."

5. "For the preparation of persons to serve as teachers of the vocations of agriculture, trades and industries, and home economics—in departments of divisions of education in the State colleges of agriculture and the mechanic arts of the respective States and Territories established under the act of Congress approved July second, 1862."

The bill further provides for the establishment of a secondary agricultural school and branch station in each district, the total

[80] Report of United States Commissioner of Education, 1911, p. 149.

number of such districts in a given state or territory to be not less than one for each fifteen counties nor more than one for each five counties and fraction of five counties.

It is not the purpose of the bill to maintain the secondary schools but to co-operate with the states in encouraging instruction in and preparing teachers for those activities mentioned in the above items. The bill provides funds for this purpose.

Recently Senator Page stated that the bill has been amended and perfected so as to secure for it the enthusiastic endorsement of over 90% of the leading educators of the country. To these endorsements may be added the hearty support of many associations and organizations which have given the bill serious consideration. If the bill becomes a law, it is to be hoped that similar benefits may obtain to secondary education as obtained to higher education through the establishment of the state colleges of agriculture and mechanic arts by the land grant act of 1862.

Conclusion

As was stated in the preceding chapter, I believe that the benefits derived from the proper presentation of manual training to be of sufficient value to warrant its maintenance in those schools where it is now taught, and to warrant its further introduction. But statistics seem to indicate that it has not succeeded in keeping a greater percentage of boys in school. As a result of this fact and other conditions that have been suggested in this chapter, various educational experiments are now being tried and advocated. Whether or not we are working in the proper direction depends largely upon what we conceive to be the purpose and aim of education.

If the chief aim of education be a cultural one, then, perhaps, the old classical courses will best fit the pupils for this end; but if the chief aim be broader than this, if it is to be "an undertaking by the social body itself to fit an individual to carry on smoothly, in conjunction with others, the work necessary for the highest and fullest life of all, the further idea at once comes, that since society is progressive, since social demands change from time to time, since each generation and age has its own spirit and ideas

to realize, education cannot be a static, changeless scheme or system."[81]

Prof. Paul H. Hanus states that the special aims of elementary or early education are:

1. "To nourish the mind of the child through a course of study which should comprise an orderly presentation of the whole field of knowledge in its elements, and thus acquaint the pupil with the world in which he lives and the civilization into which he is born, and of his own relations to them, including his duties and his privileges; and thus to provide the opportunity for the exercise of all the child's powers, mental and moral, aesthetic, manual or constructive, through good instruction and wise discipline."

2. "To guard and promote his normal physical development."[82]

The special aims of secondary education are:

1. To discover and systematically to develop a human being's interests and capacities; intellectual, moral, aesthetic, manual, or constructive.

2. With constant regard to the progress of this discovery to so direct his development, as gradually to emancipate him from external restraint and guidance, in order to render him, as far as possible, self-directing, i. e., physically, mentally, morally, stable, alert, vigorous, and active.

3. To enable a youth to realize that he owes a duty to society as well as to himself; and hence, that the prizes of life—namely, wealth, leisure, honor, in order to possess lasting worth in his own estimation and in the estimation of his fellow men, must be earned; or, when inherited, as they sometimes are, that they must be deserved; that, in short, man's highest and most permanent ideal is service.[83]

If these be the true aims of education, then appropriate courses should be established to fulfill them whenever conditions warrant it. If we fail to provide such courses for the pupils we may prevent them from developing the powers which they possess and

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[81] John M. Gillette, "Vocational Education," p. 73.

[82] Paul H. Hanus, "Educational Aims and Educational Values," p. 64.

[83] *Ibid.*, p. 65.

divert them into other paths which may prove to be of more interest but of less ultimate value.

The mere fact that, in the past, we made the mistake in believing that these courses which aimed chiefly at culture were the most efficient for all concerned does not warrant us in going to the other extreme. The needs of the community, the forms of industry, and the attitude of the parents, should all be carefully investigated before decisive steps are taken toward the introduction of a new course of study into a public school system. The experience of those who have already adopted that course should also be carefully considered.

Opinions differ as to whether the trade school, the continuation school, the half time school, and the industrial school should be controlled by the public school system or not. But in either case, extreme care must be exercised to prevent a growth of class distinction. It was this factor more than any other that retarded the growth of the public school system at its inception. The public school was the "charity school" and a sharp and fast line was drawn between the children who had to attend the public schools and those who could afford to go to pay schools.

In this case, the line would be drawn between those who attend the classical schools and those who attend the schools where manual work is required. It has taken a long time to break down the prejudice against manual training schools, and even now it has not wholly disappeared. And it seems quite probable that this feeling might be greatly intensified in the newer type of school.

It is not fair to assume that if the type of schools mentioned work well in Germany or some other European country it will work well in the United States. In many of the foreign countries the class lines are sharply drawn and are recognized and accepted. The son usually follows the same occupation as his father. He does not have to choose his trade; he simply enters the school that will fit him for his father's occupation, when the time for a choice comes. Such a condition does not exist in this country to any very great extent. Foreign experience may indicate to us the proper lines along which to experiment but we must base our conclusions on our own experiences and the results obtained.

Ever since our War for Independence, we have prided ourselves on the fact that we have been a democratic nation. The Colonists felt that taxation without representation was a wrong principle; that it was the inalienable right of the taxed to have a direct voice in the government. This latter principle was one of the dominant factors in precipitating the war and has been our most cherished privilege since that time.

In the Declaration of Independence, one of the truths enunciated as self-evident was "that all men are created equal." But the spirit of democracy goes further than that. All men should be given an equal opportunity to prepare themselves for their respective places in society. The only way in which we can obtain such a condition is to adjust the public school system to meet the needs of the community and the individual.

We have been wrapped up in the close net of tradition ever since the first attempt at education was made in this country. There is nothing more difficult than to rend asunder the bonds with which custom surrounds a national institution. There is always a vast number who will continually put forth the argument that what was good enough for them will be good enough for posterity.

If we could but eliminate our educational traditions and face the problem of how best to educate the youth of this country so as to best fit them to make an honest livelihood and take their proper places in society, we would be better able to understand the present needs of our educational system.

"A modern democracy of the industrial type demands both an extension of educational privileges, and a departure from the traditional methods of instruction in order to fulfill the conditions necessary to prolonging its existence. The democratic view of education is just beginning to rise above the pedagogical horizon. Free compulsory education is not democratic, if it is of the kind and character which is valuable chiefly to the professional man, or to the man of leisure; nor is it democratic if it merely aims to increase the efficiency and speed of the employees in our great industrial establishments.[84]

[84] F. T. Carlton, "Educational and Industrial Evolution," Int. p. 8.

"The former overlooks completely the dynamic view of the world; its eyes are turned backward toward the past. It magnifies the desirability of disciplinary and purely cultural studies; and on the other hand it minimizes the value of, and often sneers at, the practical and concrete. * * * * On the contrary, the partisans of the practical studies are prone to forget the lessons of the past, and to see only the immediate monetary value of the training which they advocate."[85]

[85] F. J. Carlton, "Educational and Industrial Evolution," p. 74.

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